

Urbanization of Bihar Plain

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ABSTRACT

Present study : The region selected for the present study is 'Bihar Plain'. It forms a distinct natural region and constitutes the eastern section of the Middle Ganga Valley of the Indian Sub-continent. It covers about 80,592 square kilometres of area covering about 50.86% of the total area of Bihar State. The region is inhabited by about 34.68 million people (75.12% of the total population of the State of Bihar) of which about 2.65 million comprising 7.59% of the total population live in its 90 towns.

The study attempts to bring out a consolidated picture of the trend of urbanization in Bihar Plain in its historic perspective, and a close analysis has been made since the middle of the 19th century. It further aims to evaluate as to how far the growth is based on geographical conditions.

The study has been split up into three parts. The first part deals with the geographical setting of the region and consists of two chapters the first deals with the physical geography while the second chapter gives the historical background.

Part II of the thesis which begins with the third chapter traces the origin and evolution of towns, while the chapter that follows is devoted to the discussion of the trend of modern urban growth and distribution of towns since 1872. Part III is devoted to the examination of the 'Form & Function' of towns in the region and includes three chapters. The fifth chapter is devoted to the discussion of the morphology i.e., the external and internal form of the individual urban settlement units.

The discussion embodies in it the build, structure, internal pattern and the layout of the streets which are influenced on the one hand by the site and situation and on the other by the behaviour and character of the community associated with them. In the sixth chapter a quantitative approach is employed to bring out the functional structure of the towns. An attempt has also been made to bring out a distinctive functional grouping of the towns. The seventh chapter has been devoted to the analysis of the urban hierarchy in Bihar Plain. The total picture of the urban settlement and the trend of urbanization in Bihar Plain with some retrospect, planning etc have been summed up in the conclusion.

Original Contribution : The region has been divided into micro natural regions. The historical background also includes the study of the geo-political units, the economic condition and the general developments of the region at the various stages i.e., ancient, late medieval, modern and post-independence period which, as far as the writer is aware have not been discussed in the geographical perspective earlier.

The evaluation of the urban settlements, their origin and growth in especially the ancient and late medieval period is new in the sense that the whole is reconstructed from indirect sources such as traveller's account, and the settlement reports and reports of the archaeological survey of India.

The influence of site and cultural background on the morphology of towns of the region is brought about very vividly. A number of new and interesting features have been noticed in the towns of Bihar Plain on the basis of detailed study of topographical sheets and municipal

maps and field observations from town to town and from ward to ward.

It has further been attempted to distinguish between specialization centres with respect to human occupation dwelling in the towns and the services they render. The classification that is adopted here is based primarily on Nelson's idea of 'Standard Deviation Method' but Hariss' original idea and more especially Pownall's idea of mean percentage has also been given due consideration in keeping with the conditions prevailing in Bihar Plain.

The modern concept of central place, the delineation of the centres into urban hierarchical order and the delimitation of their unlands have been scientifically applied for the region for the first time. Several indices such as administration, traffic flow, education, etc have been considered but the final grouping has been made on the basis of their efficiency and servicing ranks.

The analysis of the trend of urbanization in a region like Bihar Plain as outlined above can be regarded as an example and it reflects the social and economic advancement and the general development of a region. Indeed it leads to ways and means for the improvement of the existing urban agglomerations and may also prove to be the guiding lines for a better planning of such settlements or the region in future.

PREFACE

The present study aims at analysing the trend of urbanism in Bihar Plain which covers the eastern two thirds of the Middle Ganga Valley. The analysis of urbanization does not pertain to the modern period alone but has also been considered in the historical perspective.

The urban settlements whether big or small in the Bihar Plain have evolved and are evolving today in an economy and structure of society which is rather different from that of the western world. It is not surprising therefore that the urban centres under discussion present an entirely different townscape. The present work elucidates many interesting points in this regard.

I personally think that but for the positive and sincere interest of Dr. Mohammad Shafi, University Professor and Head of Department of Geography, Aligarh Muslim University, Aligarh and who has acted as my supervisor, the present work could not have been completed. I take this opportunity to record my deep and sincere gratitude for him. I would also like to express my sincere thanks to Professor Enayat Ahmad, Head of the Department of Geography, Ranchi University (Bihar) for his most valuable comments and suggestions and the inspirations which sustained me throughout this work. I am also thankful to Professor P. Dayal Head of the Department of Geography, Patna University for his suggestions and facilities which he provided to me in the Department of Geography, Patna University in carrying out my work.

I should also express my thanks to all those who have helped me in accomplishing my present work.


(S. N. Karimi)

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Abbreviations & Terminology

ABBREVIATIONS & TERMINOLOGY

- AAAG - 'Annals of the Association of American Geographers' - a quarterly journal published in March, June, September and December, at the Allen Press, Lawrence, Kansas (USA).
- Amil - Chief Revenue Officer of a Sarkar during Muslims.
- Anchal - Smallest revenue unit into which Bihar State is divided. It is equivalent to or slightly less than the area of a police station.
- A.S.I. - 'Archaeological Survey of India', annual report, Government of India, Central Publication, West Calcutta (1871-82).
- Bandh - Protective embankments along the river banks, e.g. Kosi Bandh.
- B.D.G. (B.O.D.G.) - 'Bihar & Orissa District Gazetteer' - a detailed account of the various districts by O'Malley, L.S.S. (1906-09) revised by James (1924-26) and re-written by Roy Choudhary, P.C. (1957-65). Now it is called 'Bihar District Gazetteer'.
- Bodhi Tree - The sacred bow tree at Bodhi Gaya - the Mecca of Buddhism; a place where Sakya Sinha (Buddha) attained supreme enlightenment. The place is adorned with Mahabodhi temple.
- Bidi - Country cigarette.
- Buddhist - Devotees of Buddha.
- Bungalow - Corruption of a Bengali house - a chalet with a porch all around it and set in a spacious compound. Such houses were better adopted by Britishers.
- Burhi - Old. e.g. Burhi-Gandak, i.e. Old Gandak.
- C. G. R. - 'Calcutta Geographical Review' - for details see G. R. I.
- Chaitya - a temple or shrine, e.g. Chaitya at Bodhi Gaya.
- Chauki - A check-post or police station or customs house e.g., Mirza Chauki.
- Chaur - Long marshy depressions which develop into a vast chain of temporary lakes during rains. Largest of such a chaur is 'Tal Braila' in North Bihar.

- Chawk - The heart or the 'core' of an Indian city - same as the 'kernel' (after Smailes) of a British town or the 'square' of the American city. It is the commercial core or specialized business functional zone of an urban centre - equivalent to American Central Business District (C.B.D.) with godowns and stores, shops & restaurants etc. and where one finds all one needs if not under one roof at least within a specific zone.
- Civil lines - Modern section of the town where Government offices etc. occur.
- Dargah - Sacred tomb of a Muslim religious saint, e.g. Bari Dargah, Biharsharif (containing the tomb of Makhdum-ul-mulk Shah Sharfuddin Laneri); Dargah Shah Arzani, Shahganj, Patna, etc.
- Darwaza - Gate, e.g. Pachchim Darwaza, Gulzarbagh, Patna.
- Dastur - Moghal administrative unit with an area equivalent to the present district. It was an aggregate of Parganas or mahals, e.g. Dastur-i-Bhagalpur; Dastur-i-Telhara; Dastur-i-Mehsi.
- Diwan - Chief Revenue Officer of a subah (Province) during Muslims (Late Medieval period).
- Doab - The tongue or tract of land between two confluent rivers, e.g. Burhi Gandak - Bhaghmati Doab in North Bihar Plain.
- D. V. C. - Damodar Valley Corporation.
- E. G. - 'Economic Geography' - a quarterly geographical magazine published by the Clark University, at 10 Ferry Street, Concord, New Hampshire, (USA)
- E. R. - Eastern Railway - the section of the Indian railway line between Mughalsarai and Howrah.
- Faujdar - Executive and military head of a sarkar during Muslims
- Geography - 'Geography' - a geographical magazine published once a term during spring, summer and autumn for the Geographical Association by the London Geographical Institute. Formerly it was known as 'Geographical Teacher'.
- Geographer - 'The Geographer' - a journal of the Muslim University Geographical Society, Aligarh.

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- G. O. - 'Geographical Outlook' - a journal published by the Department of Geography, Ranchi University, Ranchi (India).
- G. R. - 'Geographical Review' - a quarterly magazine published by the American Geographical Society of New York (USA).
- G. R. I. - 'Geographical Review of India' - a quarterly magazine published by the Department of Geography Calcutta University, Senate House, Calcutta-12. Formerly it was called C.G.R. (Calcutta Geographical Review).
- G. S. - 'Geographical Studies' - a geographical magazine published twice in a year in January & July by Birkbeck College, Malet Street, London, (U.K.)
- G.T.Road - A road that was aligned by Sher Shah in about four months time from Calcutta to Peshawar Valley. It is today National Highway No.2.
- Hookah tube - A long linen tube used in Hooqah, the hubble-bubble. It is locally known as Fateah Painch.
- I. A. - 'Indian Antiquary' - a journal of Oriental Research in Archaeology, Bombay.
- I. B. G. - 'Institute of British Geographers' - Transaction and Papers (special yearly publication) published by the Royal Geographical Society, London (U.K.)
- I. G. J. - 'Indian Geographical Journal' - a quarterly magazine published by the Department of Geography Gopalapuram, Cathedral, Madras. Formerly it was known as J.M.G.A. (Journal of Madras Geographical Association).
- Iqta - a subah or province; the name given to a large fiscal unit (prior to Akbar's time).
- Jadid - New (not old) i.e. of Muslim period, e.g. Bhojpur Jadid.
- Jalla - Low lying depression liable to flood e.g. Jalla area of Patna.
- J.B.R.S. - 'Journal of Bihar Research Society', Patna 1937 to date. Formerly it was known as J.B.O.R.S. (Journal of Bihar & Orissa Research Society) 1915-36).
- J.B.O.R.S. - 'Journal of Bihar & Orissa Research Society' 1915-36; For details see J.B.R.S.

- J.L.G.A. - 'Journal of Madras Geographical Association'
For details see I.G.J.
- J.P.R.A.S.B. - 'Journal & Proceedings of the Royal Asiatic Society of Bengal'. See also J.R.A.S.B. 1905-34.
- J.R.A.S.B. - 'Journal of the Royal Asiatic Society of Bengal'
Asiatic Society, Calcutta, Published since 1934.
Formerly it was called J.P.R.A.S.B. (Journal & Proceeding of the Royal Asiatic Society of Bengal, 1905-34).
- J.R.A.S. - 'Journal of Royal Asiatic Society of Great Britain and Ireland'. John W. Parker & Sons, West Strand, London.
- Kasi - Earliest name of the city of Banaras. Today it is called Varanasi.
- Khadar - New (late or upper Pleistocene or recent) alluvium.
- Kharif crops - Crops of rainy season (July - October).
- Khas khas ki Tatti - Screens of scented grass that are placed at the windows and doors and kept constantly wet, so that the hot 'loo' wind during summer blows into the house cooled and tempered.
- Li - A chinese measure of length equivalent to 1/6th of a mile (Approximately 4 Li = 1 Kilometre).
- Loo - Hot and strong west winds blowing till the advent of the summer monsoons.
- Lund studies - 'Lund studies' in Geography, Special Bulletin, published by the Department of Geography, Lund University, Sweden.
- Madrasa - Oriental college of late Medieval age, imparting knowledge in Persian, Arabic etc. languages e.g. Madrasa Lojibia, Phulwari.
- Mahasangharam - Ancient name for University, e.g. Halanda Mahasangharama.
- Mahal - a ^o place (See also Parganas)
- Maharaja - Great raja, or native chief, title given to persons incharge of bestowed raj estates, e.g. Maharaja Darbhanga.

- Laidan** - an open space providing pleasure ground and may be good site for athletic or for social gathering, e.g. Gandhi Laidan in Patna.
- Lagbara** - a rauza or tomb, e.g. Shah Shahid ka Lagbara (i.e. tomb of Haibat Jang Zainuddin, the martyr) Begampur, Patna city.
- Lara** - a dead channel of a river; usually associated with the Kosi or the Son.
- Master Plan** - a detailed plan of the streets, dwellings and landuse units formulated on the basis of comprehensive surveys of the problems and conditions existing in an urban area. It aims to arrest and wherever possible rectify within available means the rather chaotic growth of the past and to provide guidelines for harmonious developments in the future e.g. Patna Master Plan.
- Mohalla** - a ward or unit of the settlement area.
- Monastery** - See Vihara.
- Nadi** - a river
- Nazim or Sipah Salaar** - Executive and Military head of a Subah during, . . . Muslims equivalent to the present Governor of a province.
- Naib Nazim** - Moghal Deputy Governor of a subah or province, e.g. Raja Ram Narayan was the Naib Nazim of Bihar with Serajuddaula as Nazim-i-Bengal (1756)
- N.E.R.** - North Eastern Railway - section of the Indian Railway line between Allahabad & Katihar.
- J.G.J.** - The 'National Geographical Journal of India' published by the Department of Geography, Banaras Hindu University, Varanasi-5.
- Nirvana** - Salvation of soul, e.g. Lord Mahavira attained his Nirvana at Pawa.
- N.F.R.** - North Frontier Railway - Section of the Indian Railway line north east of Katihar.
- Pachchim** - West. e.g. Pachchim Darwaza, Gulzarbagh, Patna.
- Pargana or (Mahal)** - a smallest fiscal unit during Muslims coinciding with the dominion of a native chief under the Moghal dynasty.

Period	- duration of time :- e.g. (a) Ancient & early Medieval period - i.e. Prehistoric days to A.D. 11th Century. (b) Late Medieval period - i.e. 12th Century to mid-18th Century. (c) Modern period - i.e. Mid-18th Century upto date.
Purab	- east. e.g. Purab Darwaza, Lalasalami, Patna; Purab Sarai, Monghyr, etc.
Purana	- Old, e.g. Purana Dazar, Muzaffarpur city.
Qadim	- Old (ancient) i.e. of Hindu period, e.g. Bhojpur Qadim.
Qasba	- a big village or a country town.
Qazi	- Judicial head of a sarkar during Muslims
Qazi-ul-Qazzat	- Judicial & religious head of the subah (Province) during Muslims.
Rabi crops	- Crops of winter season e.g. wheat, potatoes, etc.
Raja	- a native chief or the king. See also Maharaja.
Rauza	- a tomb or mosque.
Rishi	- a saint
S.A.B.	- ' <u>Statistical Account of Bengal</u> ' - a detailed account of various districts by W.W. Hunter, London 1872-77.
Sabai	- a kind of grass grown mostly in terai land. It is specially used in paper industry.
Sangharana	- a monastery or probably a college (as it was called in ancient days) e.g. at Malanda.
Sarai	- Towns along the road with an inn - common in late Medieval period - e.g. Safia Sarai, Shah Sarai, etc.
Sarkar	- Moghal administrative unit with an area equivalent to the present division. It was an aggregate of dastars (district) e.g. Sarkar Tirhut
Saryu	- ancient name of river Ghaghara (Gogra)

- S. G. M. - 'Scottish Geographical magazine'- a quarterly journal published by the Royal Scottish Geographical Society, Edinburg.
- Shah - The emperor or the king e.g. Sher Shah
- Shahid - a martyr
- Shiqdar - Executive head of a pargana during Muslims. He was incharge of police as well as criminal justice and was assisted by thanedars and muftis.
- Sona - ancient name of the river Son
- Stupa(Main) - a funeral mound in the form of solid dome-like structure enshrining corporeal remains of Buddha or to commemorate important incident in his life. e.g. main stupa, Nalanda; Stupa Giriak, etc.
- Stupa (votive)-a small stupa - votive emblems, contributed by pious devotees as a work of religious merit, e.g. votive stupas Bodh Gaya, or at Nalanda.
- Subah - a province e.g. Subah-i-Bihar.
- Surma - a sulphurate of antimony used as powder for keeping the eye cool and clean.
- Tal - Low lying depression liable to flood e.g. Lokameh Tal, Tal Braila, Kabar Tal, etc.
- Tarai - Himalayan Foothill plains
- Thana - a police station, or a fiscal revenue unit.
- Tirthankar - Jain Divinity (a perfect soul). 24 such Tirthankars were there for the Jains; Lord Mahavira was the 24th or the last of all, he was born at Vaishali and attained Nirvana at Pavapuri.
- Town (as defined in India) - An Indian town is the agglomerated settlement with more than 5,000 inhabitants having density not less than 1,000 persons per square mile and where $\frac{2}{3}$ th of the people depend for their livelihood on non-agricultural source with an exception of places of out-standing historical importance.

- XIX -

- Minor Town - A town with population less than 10,000 e.g.,
Keshbhatn, Purnea District.
- Medium Town - A town with population between 10,000 and
49,999 e.g. Sasaram.
- Major Town - A town with population between 49,999 and
99,999 e.g. Monghyr
- A city - A town of high rank having population
1,00,000 and over, e.g. Patna.
- Urf - alias e.g. Toghlaqpur urf Tirhut (Darbhanga)
Akbarnagar urf Rajmahal; Shah Shamsuddin
Mahmud Bhaingra urf Haji Ilyas / founder of
the towns of Hajipur and Shamsuddinpur
(Samastipur) /
- Vana - a jungle or orchard land. e.g. Amra vana,
Venu vana, Rajagriha
- Vihara - A monastery (hostel-cum-college) accomodating
Buddhist monk e.g. Vihara at Halanda.
- Zamindar - a landlord.

Introduction

INTRODUCTION

Urban centres develop in a definite pattern in response¹ to economic and social needs. They are in short 'the mirrors of² their age and the epitomes of their region'. The degree of urbanization in this way reflects the social and economic advancement and the general development of a region. Indeed the towns of various orders according to size or function or hierarchical order are the best entities reflecting these trends. The study of urban geography of a region, which has always given useful results, has now gained much popularity specially in the field of town or regional planning. Along with its growing importance, there has been a rapid development in the evolution of concepts in urban geography.

The growing importance of urbanism in India was felt and fully discussed in a symposium on 'urban development trends in India' sponsored by the Indian Economic Association which was³ held at California (USA) in 1960. The geographical approach relating to regional studies was, however, presented by Enayat Ahmad, Muzaffar Ali, C.D.Deshpande, V.L.Prakasa Rao, etc. Quite comprehensive urban surveys amongst these are Enayat Ahmad's excellent studies of the States of U.P. and Bihar entitled

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1. Harris,C.D.& Ullman,E.L.- The nature of cities-Readings in urban geography edited by Mayer & Kohn,(Chicago,1959)page 277.
 2. Smailes,A.E.- Geography of Towns (London 1963),page 70.
 3. Bert,F.Hoselitz - A survey of literature on urbanization in India - Indian's urban Future edited by Roy Turner, (Bombay,1962) page 429.

4 5

'Settlements in the United Provinces of Agra and Oudh and Bihar' respectively. The former work gives a detailed account of the origin and evolution of the towns in the Ganga Valley of Uttar Pradesh and brings about interesting points with regard to their morphological setting. The latter work gives due consideration to the functional classification of the towns and discusses the spacing of the service centres in the State of Bihar on modern lines. The study of the towns of Indian desert was presented by Luzaffar Ali at the International Geographical Seminar held at Aligarh in January 1956. The paper gives a concise description of the origin, growth, function and morphology of the towns in the

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4. Ahmad, E.- 'Settlements in the United Provinces of Agra & Oudh' Unpublished Ph.D. Thesis, London School of Economics (London 1948).
 5. Ahmad, E.- 'Bihar - a physical, economic & regional geography'. Ranchi University, (Ranchi, 1965).
 6. Ahmad, Enayat is at present University Professor & Head of the Department of Geography, Ranchi University. The writer had the opportunity to read the entire manuscript of his unpublished Ph.D. thesis there. Part of this now appears in published form:-

(i) Ahmad, E.- 'Origin & Evolution of the towns of Uttar Pradesh' Geographical outlook, Vol. I (Ranchi 1956) page 38-58.

(ii) Spate, O.H.K. & Ahmad, E.- 'Five cities of the Gangetic Plain' G.R. Vol. 40 (New York 1950) pages 260-78.

Hoselitz considers Ahmad's such a discussion as 'outstanding amongst all other such works (India's urban Future) edited by Roy Turner (Bombay 1965) page 430.

7. Ahmad, E.- in his book 'Bihar' includes chapters on morphology, functional classification, umland of towns, etc. He discusses the spacing of the service centres here on the lines of Walther Christaller.
8. Ali, M - 'Towns of the Indian Desert' Proceedings of the International Geography Seminar Aligarh Muslim University (Aligarh 1956) pages 281-299.

western districts of Rajasthan State, lying to the west of the Aravallis. Other such regional urban studies are those of C. D. Deshpande⁹ (cities & towns of Bombay Province - 1941), N. Subramanyam¹⁰ (cities of Tamilnad - 1941), V. A. Janaki¹¹ (functional classification of urban settlements of Kerala - 1954), B. Sinha¹² (urban Geography of Orissa - 1957), V. V. Ramanatham & V. Venkatesawarlu¹³ (town formation in Andhra Pradesh - 1957), Meera Guha¹⁴ (urban regions of W. Bengal - 1957) and V. L. S. Prakasa Rao¹⁵ (towns of Mysore State - 1964). But in most of these works, the authors are in the main concerned with the size and distribution of the towns and with a few exception such as of Kerala towns, a rather hypothetical approach is indicated towards their classification with respect to functions. Although in case of a few sample towns in Mysore state, the modern concept of city region is applied by Prakasa Rao, in almost all the other cases, the modern concept of the hierarchy of the city

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9. Deshpande, C. D. - 'Cities & Towns of Bombay Province', I.G.J. (Madras 1941) pages 260-286.
 10. S. Subramanyam, N. - 'Regional distribution & the relative growth of the cities of Tamil Nad' - I.G.J. Vol. 6 (Madras 1941) pages 71-89.
 11. Janaki, V. S. - 'A functional classification of urban settlements of Kerala', Journal of the M.S. Univ. of Baroda (1954) pages 79-89.
 12. Sinha, B. - 'Urban Geography of Orissa' - I.G.J., Vol. 32 (Madras 1957), pages 86-94.
 13. Ramanatham, V. V. & V. Venkatesawarlu - 'Economic aspects of town formation in Andhra Pradesh', I.G.J. Vol. 33 (Madras 1957), pages 63-85.
 14. Meera Guha - 'Urban Regions of W. Bengal' - G.R.I. Vol. 9, No. 3 (Calcutta September 1957), pages 31-44.
 15. Prakasa Rao, V. L. S. - 'Towns of Mysore State' Indian Statistical Institute, Series No. 22 (Calcutta, 1964).

centres and their umlands is totally ignored. The analysis of the various morphological aspects of the urban centres except of the brief discussion in the case of the Thar Desert towns, is again lacking or only partially touched in almost all of these regional studies. Very recently some substantive urban studies have however been made on modern lines in Eastern U.P. by R.L.Singh, Ujagir Singh, R.L.Dwivedi, Kashi Nath, etc. A consolidated picture by these individual effort for the entire eastern U.P. region may probably form a valuable contribution in near future.

Region under discussion

The region selected for the present study is 'Bihar Plain' It forms a distinct natural region and constitutes the eastern section of the Middle Ganga Valley. It covers about 88,592 sqr. kilometres or 34,179 sqr.miles of area constituting about 50.86% of the total area of Bihar State. The region in 1961 was inhabited by about 3.6 million people of which some 2.6 million comprising 7.59% of the total population resided in its 90 towns.¹⁶

Purpose & Scope of the present study.

This study attempts to bring out a consolidated picture of the trend of urbanization in Bihar Plain since the middle of the 19th century. It further aims to evaluate as to how far the growth is based on geographical conditions. The analysis of their growth may lead to ways and means for the improvement of the existing urban agglomeration and may also prove to be the guiding lines for a better planning of such settlements in future.

It has further been attempted to distinguish between specialization centres with respect to human occupation dwelling in the towns and the services they render. It should be noted that towns do not grow by themselves. There is sometimes a competition between the large urban centre on the one hand and the countryside or those small urban centres which are specializing in some aspects on the other. The area which are tributaries to these centres for their essential needs are termed as urbanfields or 'Umlands'. The morphological aspect of the existing sites along with their territorial growth and the impact on immediate surrounding of each town will suggest for a unified planning. Patna is growing into a great conurbation some 22 miles long from Fatwa in the east to Dinapur and even beyond it in the west. It is fast developing to include even Phulwari and Khagaul. The talk of a Greater Patna and its improvement by the Patna Improvement Trust would appear to be too localised an effort and it appears that such a planning is meant to reach fruition in a decade or two. For a fruitful planning on a national level to serve the generations to come, it must necessarily be extended a little to the west of the present western limit of Greater Patna Plan to include Phulwari Khagaul and Dinapur. In case however, a bigger area is to be developed or planned, the best choice instead of a revenue thana, sub-division or a district, would probably be the umland of certain urban centre where every thing, as a matter of fact, is geographically unified in a natural way.

The Text and the illustrations

The study has been split up into three parts. The first part deals with the 'Geographical Setting' of the region. It consists of two chapters. The opening chapter deals with the physical geography of Bihar Plain. Geographical factors such as the nature of the boundary of the region, its geological evolution and the structural conditions of the basement or overlying rocks and deposits, physiographic features such as relief and drainage, climatic conditions and vegetation, i.e. factors which have a bearing on human settlements in general and urban concentration in particular - have all been discussed. An attempt has also been made to divide the region into natural regions and a brief note has also been added in each case. This has been done in order to make pointed reference to local areas in later discussion vivid and clear. In the next chapter the 'historical geography' of the region is discussed. For the sake of convenience the ancient (Pre-historic upto A.D.11th Century), Late Medieval or Muslim period (A.D.12th Century to mid-18th Century) and Modern period (middle of 18th century upto date) are dealt with separately. Under each period, the various geo-political units of the region have been outlined. This is further followed by a brief discussion of the economic conditions and general developments including political happenings of the age concerned. The economic condition and general developments carried on specially in the modern British days and during the post-independence period have been illustrated with several maps. These two chapters, the first on physical setting and the other on historical background, in this way, give a sound geographical basis for the next part which deals

with the trends of urbanization and distribution of towns in the region.

The third chapter opens the second part of this study and traces the 'Origin and Evolution of Towns'. Here too, the ancient, late medieval and modern towns are discussed and illustrated separately. The various factors, geographical, political, religious or economic, etc., responsible for their origin and growth have been fully dealt with. The chapter that follows is devoted to the discussion of the trend of modern urban growth and distribution of towns since 1872. The discussion here is based on various decennial census counts and is illustrated with a number of maps depicting the trends of modern urbanization in the region. The variation in urban population and the reasons thereof have been briefly discussed here. In discussing the towns, an attempt has been made to show how their distribution is related to the historical antecedents of the area and to a great extent to the physical and economic factors.

The third part is devoted to the examination of the 'Form and Function of Towns' in the region. This part consists of three chapters. The fifth chapter which is devoted to a discussion of the 'Morphology' i.e. the external and internal form of the individual urban settlement units. The discussion embodies in it the build, structure, internal pattern, and the layout of the street which are influenced on the one hand, by the site and situation and on the other by the behaviour and character of the community associated with them. The site, selection and the pattern of the towns of Bihar Plain are

discussed with examples. In the sixth chapter the different criteria for the classification of towns with regard to their functions have been examined. The data used and the method adopted by various modern geographers have been discussed briefly. The quantitative approach that is employed in this chapter to bring out the functional structure of the towns and to classify them into distinctive functional groups is illustrated by a number of maps. The seventh chapter has been devoted to the analysis of the 'Urban Hierarchy' in Bihar Plain. The concept of central place theory has also been discussed. An attempt is then made to delineate the towns into various hierarchical order on the basis of their efficiency and servicing ranks. The latter part of this chapter discusses the umlands of the central place. Although here the primary and secondary areas of the influence of a number of towns (central places) big or small has been determined with the help of field investigation, umlands of only the five cities namely Patna, Gaya, Bhagalpur, Muzaffarpur and Darbhanga are discussed in detail.

The total picture of the urban settlement and the trend of urbanization in Bihar Plain with some retrospects, planning etc. have been summed up in the conclusion which actually forms the last chapter of the present study.

Source and the method employed

The difficulties encountered in the compilation of this work have been great. In the first instance reliable maps and to a certain extent reliable data are lacking. The Census population

figures are the only published data and indeed the only source which can serve as the base for the discussion.

For the first chapter all possible source pertaining to the physical geography of the region were consulted. But the settlement and other reports at district level and the various District Gazetteers were highly useful.

For the chapters on 'historical geography' and 'origin and evolution of towns', research articles published in specially the Journal of Bihar and Orissa Research Society and the Archaeological Survey of India reports for various years etc. were extremely helpful. Equally valuable were Prof. Samuel Beal's English translation of the accounts of the Chinese travellers like Fa-Hien (A.D. 399-414) and Hsuen Tsiang (A.D. 635). The accounts of the other travellers who visited this part of India during the Mughals and who have all vividly described the various towns and the region, were thoroughly consulted. The description in these chapters is also based on the valuable information available in the historical accounts of the region as given by the scholars of the same age. A few of the works relating to the great reformers, the Bhaktas and Sankaracharyas and the works of Muslim

17. For details - Appendix XII Page 370.

18. Most useful amongst such works of the Mughal age are Abul Fazl's Ain-i-Akbari (Akbarname Part III), Gulbadan Begum's 'Humayun Nama'; Ghulam Hussain Salim's 'Riaz-us-Salatin'; and Syed Ghulam Husain Khan's 'Seir-i-Mutakhirin'

19. Such as Sakya Sinha (i.e. Lord Budha) and Lord Mahavira.

20. Such as Dharma Swami, Ramanand, Rai Das of Arrah, etc.

21

Sufi saints were also consulted. These were specially useful in the reconstruction of the accounts and sketch maps of the sacred towns in the region. Most of the maps of these two chapters are adapted or originally prepared by the writer on the basis of the travellers descriptive account or the ideas given by the authors of the research articles or survey etc. reports.

For the chapter on the 'trend of modern urban growth and the distribution of towns', district gazetteers by Hunter, O'malley etc. on the one hand and the Census of India Reports and population tables for 1872 to 1961 on the other were relied upon.²² The distinction as a matter of fact for smaller towns till 1951 was rather vague. There was no definite criterion fixed for them. Consideration of all those agglomerated settlements with more than 5,000 inhabitants as urban in specially the early census counts of 1881, 1891, etc. was not quite appropriate. It was not such as to permit a distinction between the smaller towns and the great 'Qasbas' (big villages). But ultimately after due consideration of many facts pertaining to Indian conditions, the urban unit was later on defined in a more scientific manner than what was adopted before. The idea of Fawcett to distinguish towns from big villages on the basis of functions, i.e. in respect of the

21. Such as Yahiya Maneri, Shah Mojibullah of Phulwari Sharif, Qazi bin Ola of Bania Basarh (Vaishali), Sheikh Shoaib of Sheikhpura, Shahabuddin Pir Jaggot of Jethuli, Bankaghat, Patna, Shah Arzani of Patna, Bibi Kamalo of Kako, and Makhdum-ul-Bulk Shah Sharfuddin of Biharsharif.

22. Beverly, H. (1872); Bourdila, J.A. (1881); O'Dannell, C.J. (1891); Gait, E.A. (1901); O'malley, L.S.S. (1911); Tallent, P.C. (1921); Lacey, W.G. (1931); Yeats, N.W.H. (1941); Ranchor Prasad (1951) and S.D. Prasad (1961).

occupations of the more important part of their inhabitants and the density of over 1,000 persons per square mile of urban area was in this way the main consideration in the Census of 1961. But in the case of a few towns and cities in Bihar Plain, however, it appears that some non-rural units show their development outside the municipal or corporation boundary limit. As these lie contiguous or adjacent to some pre-existing urban centres and show great attachment to them, they cannot be separated from them. This is the case with the area of the new capital Patna, Rajendra Nagar Sri Krishnapuri, Patliputra Colony, etc. in case of Patna, the Cantonment area in case of Dinapur and Muzaffarpur and the railway colonies settlements such as one can find in the case of Katihar, Bhagalpur etc. In these cases the population of the outlying urban areas as in certain census years formed distinct urban units and were designated 'separate towns'. These contiguous parts as a matter of fact, cannot be actually separated from the city proper. In this way 'urban units' contiguous to old urban centres have geographically been considered together with the older ones. Lathaha is thus considered as a part of Motihari town, Dumra is only the prolongation of Sitamarhi to the South. Dinapur Cantonment is actually a western part of Dinapur town while Dinapur railway settlement cannot be separated from Bhagalpur town. The number of urban centres in this study therefore refers to geographical units and not the census urban units. Further for the sake of convenience and to enable one to visualize a better picture, the six classes of census towns have been condensed into only four urban categories viz.- (i) Cities (population 1 lakh and over,

constituting Class I Census towns), (ii) major towns (population 50,000 to 99,999, constituting Class II towns), (iii) Medium-sized towns (population 10,000 to 49,999 i.e. Class III and Class IV towns) and (iv) minor towns (population less than 10,000 i.e. Class V and Class VI Census towns).

The morphological study of towns is entirely the outcome of the study of topographical and municipal maps concerning the towns and personal field investigations from town to town and from ward to ward.

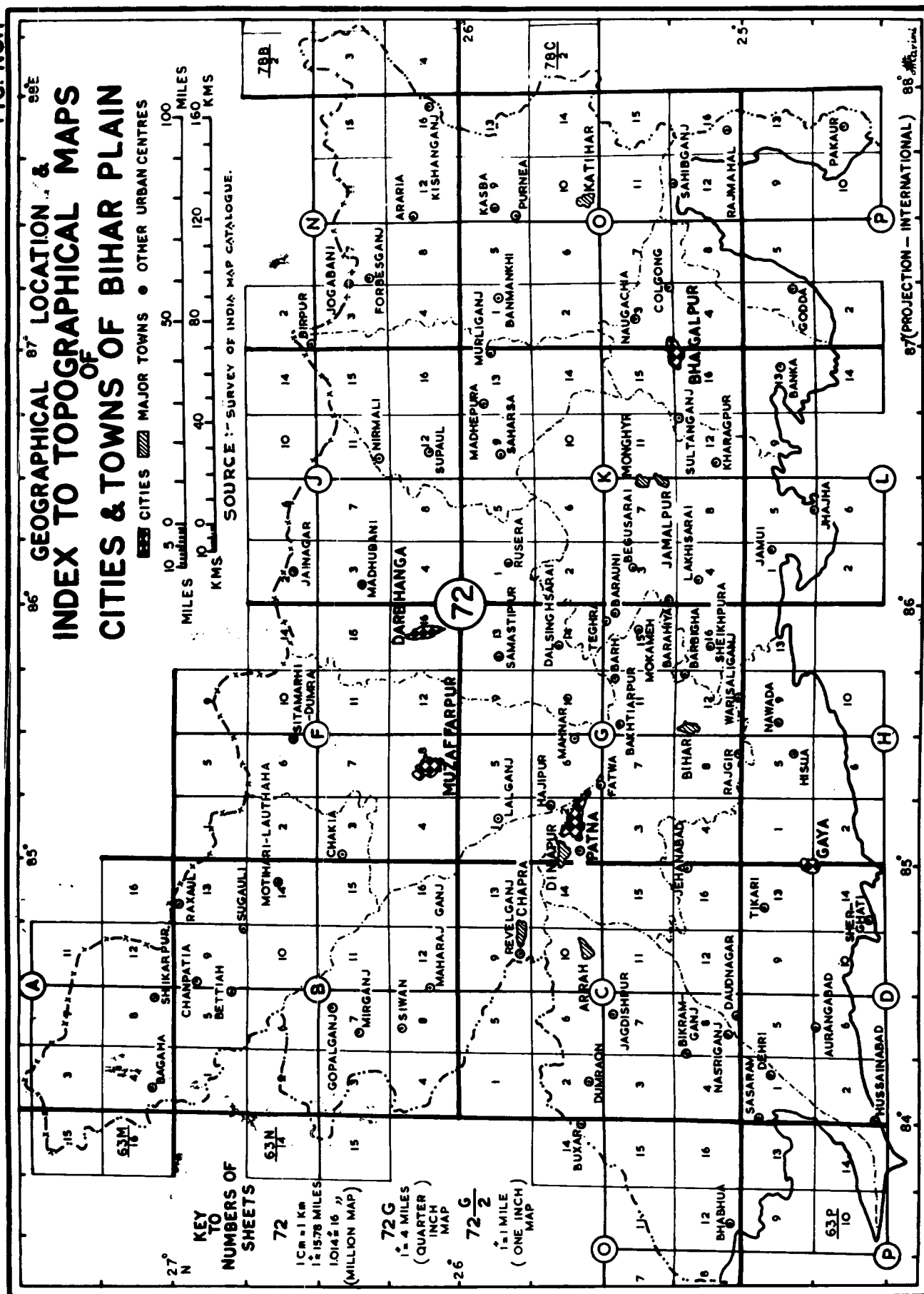
The number of working population of which figure is readily available in comprehensive form in the Census of India, report 1961, forms the basis of 'classification of towns' in the 8th chapter. But the nine occupational categories of the census report have been condensed into only five major groups viz., (i) Primary activity group engaged in the primary needs of the people, so that the predominance of this class gives agricultural outlook to the towns, (ii) the industrial workers, (iii) commercial population, the greater percentage of which make the urban centre a business mart or market towns, (iv) workers engaged in transport and communications responsible for the growth of railway towns and (v) Misc. service activity group which category may be responsible for the creation of educational or administrative town centres. The classification that is adopted here is based primarily on 'Nelson's idea of Standard Deviation Method , but Harris' original idea and more specially Pownell's idea of mean percentage has also been given due consideration. The idea of Pownell is specially

useful in delineating pattern of functional classification in the towns. But the approach and the discussions thereof and the technique followed in representing them in maps are all a bit different from those of the above mentioned American geographers. These modifications and deviations have been made in view of the conditions prevailing in Bihar Plain.

In the chapter on 'Unland' much of the idea is the same as that of the American, British and other geographers. The Indian attempts of R.L.Singh, Ujagir Singh, etc. for individual towns and E.Ahmad's attempt on the towns of Bihar, were helpful to understand the problem in the Indian context. In delineating the hierarchical order of towns, several indices such as administration, traffic flow, education, etc. were considered. But the final grouping was made on the basis of their efficiency and servicing ranks on the lines of A.E.Smailes. The 'Unlands' however, were approximately demarcated with the help of traffic flow, educational, administrative etc. zones for the respective centres. The delimitation of the limit of the Unland was just the average derived by the super-imposition of several such zones.

A number of appendices occur at the end of the text. This has been prepared with utmost care from various original sources. Appendix I for example gives the geographical location of the 90 towns and other important sites of Bihar Plain. The latitudes and longitudes in each case have been determined with the help of topographical sheets directly and are not copied from Hunter W.W., O'malley, James or Roy Choudhary's gazetteers. Their approximate figures once so important during Hunter's time

86° 87° LOCATION & INDEX TO TOPOGRAPHICAL MAPS OF CITIES & TOWNS OF BIHAR PLAIN



cannot be regarded as correct (Fig.1). Appendix 2 delimits Bihar Plain and an attempt has been made to assess its area and population as accurately as possible. Appendix 3 gives the population figure for the individual towns at each census since 1872. Appendix 4 gives at a glance the number of towns and total urban population in the two natural sections of Bihar Plain since 1872. It also brings at the same time the percentage of urban population of North or South Bihar natural sections to total Bihar Plain. Appendix 5 gives the number and population of towns at each census since 1872 by urban categories. Appendix 6 gives the trend of modern population growth (1872-1961) in Bihar Plain in relation to Bihar State and India. Appendix 8 gives the territorial distribution of towns and urban population in Bihar Plain from 1872-1961. Appendix 9 shows the details of the administrative units of Bihar Plain during the Great Moghals. Appendix 10 outlines the administration of a subah under a Moghal Governor as based on the accounts of Abul Fazl. Appendix 11 gives the details of the Raj Estates in Bihar Plain bestowed by Moghal Emperors. Appendix 12 shows the names of the travellers visiting Bihar Plain. The exact date, names of governors of Bihar and the respective Emperors at Delhi during which these travellers visited Bihar, are also mentioned. In Appendix 13, a delineation has been made of the hierarchical order of the educational centres in Bihar Plain. This gives a tentative idea on the basis of one years figure of the successful candidates at various centres in the graduate and post graduate examinations of 1964 for the Faculty of Arts. Appendix 14 outlines the hierarchical order of

servicing centres in Bihar Plain according to efficiency rank. Here the efficiency points with respect to urban amenities have been calculated for all the 90 towns of the region.

As regards the illustrations occurring in each chapter care has been taken to prepare them with the help of reliable maps and latest techniques as far as possible. List of maps consulted in preparing this work is given at the end of the appendices. This is followed by a comprehensive bibliography chapter-wise for the entire work.

PART I

GEOGRAPHICAL SETTING

Chapter One
Physical Setting

CHAPTER ONE

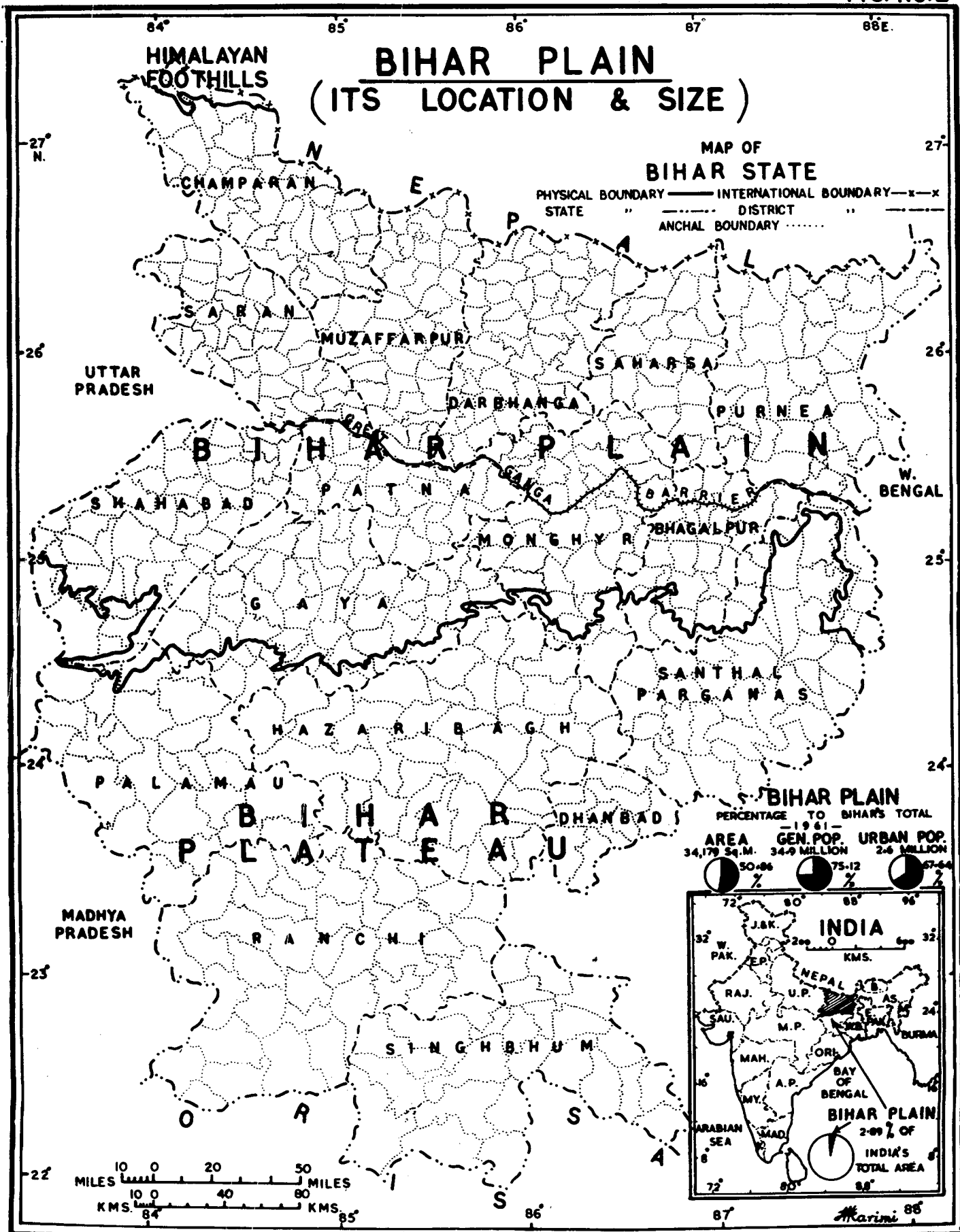
PHYSICAL SETTING

The area under study and the nature of its boundary -

The region covered by the present study is Bihar Plain. This region consists of all the territory lying to the north of the Ganga, except the Himalayan foothills in Champaran, and all the plain tract which lies to the south of the Ganga and to the north of the Bihar Plateau (Fig.2). The contour line of 150 metres is the approximate limit of demarcation between the south Bihar Plain and the Bihar Plateau. The South Bihar Plain covers Shahabad north of the Kaimur Plateau, the plains of the Palamau District in the N.Koel re-entrant, the entire district of Patna and the major portion of the district of Gaya (except the southern margin of the district occupied by the Chotanagpur Plateau). There is a very narrow alluvial apron along the Ganga in the north and east of Santhal Parganas district, which also forms part of Bihar Plain. Bihar Plain forms a major eastern section of the

1. 943 Sqr.Kilometres (364 Square miles) occupied by the Sumoswar and Dum ranges, have been excluded - Hunter, W.W. - S.A.B.-Tirhut & Champaran, Vol.14, (London 1872), Page 221.
2. The Plain in Santhal Parganas district is a narrow riverain strip about 150 miles long from Tappa Manihari to Pakaur and extends for a few furlongs on either side of the Sahibganj loop line of the Eastern Railway. It covers hardly about 799 square miles comprising only 14.6% of the total area of Santhal Parganas. (Appendix II).
3. Administratively 'Bihar Plain' includes the Tirhut, Patna and Bhagalpur Divisions of the State of Bihar, so that 'Champaran, Saran, Muzaffarpur, Darbhanga, Saharsa and Purnea' district of North Bihar lying north of the Ganga and Patna, Shahabad, Gaya, Monghyr, Bhagalpur and Santhal Parganas (except for the southern fringes of the five last named districts) are included in it. North Koel plain of Palamau district also forms a part of the Bihar Plain (Fig.2).

FIG. NO.2



SOURCE :- STATE & OTHER MAPS, GOVT. PRESS, GULZARBAGH, PATNA.

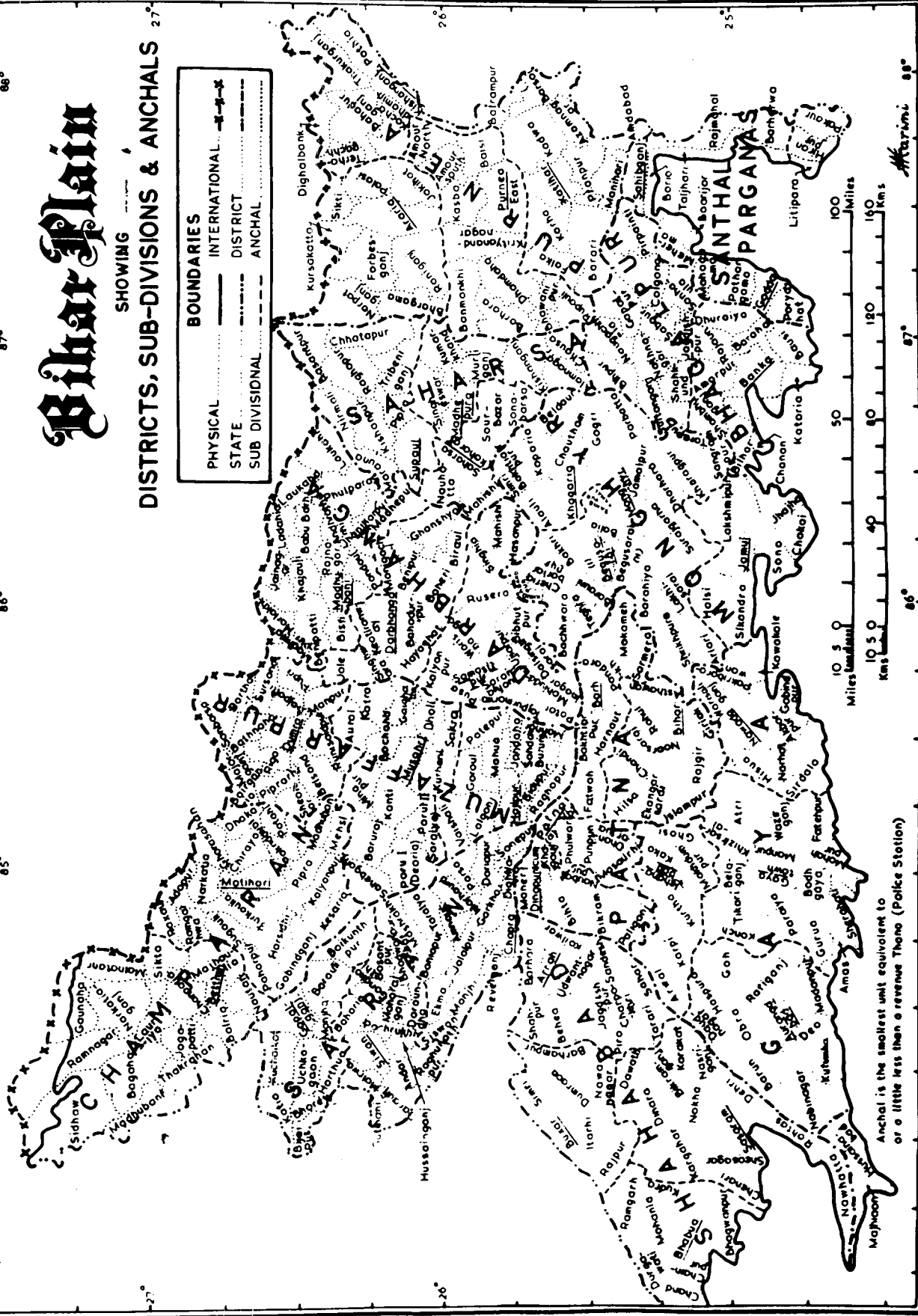
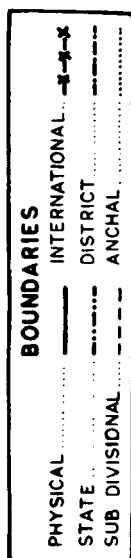
Middle Ganga Valley and lies between 24° 25' and 27° 31' north latitudes and between 83° 20' and 88° 32' east longitudes. It stretches for an average distance of about 250 Kilometres (Approx. 150 miles) from the border of Nepal in the north to the steep escarpment of Chotanagpur Plateau in the south, and about 400 Kilometres (Approx. 250 miles) on an average from Buxar along its border with Uttar Pradesh to Rajmahal on the Ganga overlooking the deltaic tracts of West Bengal in the east. It covers about 88,592 square kilometres (34,179 square miles) comprising 50.86% of Bihar's total area with a population of over 34.8 millions or about 75.12% of the State's total population (Appendix II).

Throughout its wide length in the north the 'Plain' is bounded by the terai of Nepal while only for a few miles in the extreme north east, it is bordered by the Darjeeling district of West Bengal. In the extreme north west in the Champaran district where the foot hills of the Himalayas touch the plain, the boundary is well defined and runs for a considerable distance along the crest of the Summeswar and the Dun ranges. The average height of

-
4. A maximum of 325 Kilometres (Approx. 200 miles) stretch lies along 85° E. longitude because of deltaic re-entrant of the Son, while the least north-south extent is found along 88° E. longitude where the Rajmahal hills abut almost directly on the Ganga and the distance falls to only about 145 kilometres (90 miles).
 5. The figures for area and population are based on the basis of the anchals (excluding the hilly portion) of Tirhut, Patna and Bhagalpur divisions that lie within the 'Bihar Plain'. Portions of hilly area of the anchal excluded were found out approximately with the help of planimetre. Population figures were also adjusted accordingly; while doing so care has been taken to consider the density figure for the surrounding areas of plains and hilly region. (Appendix II).

Pihar Plain

SHOWING DISTRICTS, SUB-DIVISIONS & ANCHALS



Anchal is the smallest unit equivalent to
or a little less than a revenue Thana (Police Station)

SOURCE:—CENSUS OF INDIA REPORT. (1961) VOL. 4. PART, 2. PATNA.

the ranges here is 450 metres (approx.1500 feet) but the hills vary in altitude from a few hundred metres to 635 metres (2,884 feet) above sea level at Fort Summeswar, which commands a superb view of the Himalayas (Fig.4). The hills of the Sumeswar and the Dun are all covered with thick jungles; the passage to Nepal is afforded however, only by a mountain passage of Bhikna tori Kapan and Harha. For the rest of the whole length of the northern boundary the alluvial land of 'Bihar Plain' merges with the terai lands of Nepal and the green fields of rice may appear at times stretching far and wide on either side of the frontier. The boundary is therefore marked only by the ditches and masonry pillars except in north east of Champaran where the Uria river forms a natural boundary between Nepal and Bihar.

The boundary in the south is formed by steep scarps of the Bihar Plateau called Chotanagpur Plateau. Starting from the west, we note that the steep scarps of the Kaimur plateau forms a sharp boundary with the alluvial plain in the north. From river Son to the Grand Chord line of the Eastern Railway near Paharpur, the boundary, besides being backed by elevated scarps and hill ranges follows usually the deeply dissected and thickly wooded tracts of the northern spurs of Palamau and Hazaribagh plateau. From this place eastward upto the Kiul river in Monghyr district, the boundary is defined by sharp steep scarps attaining at places

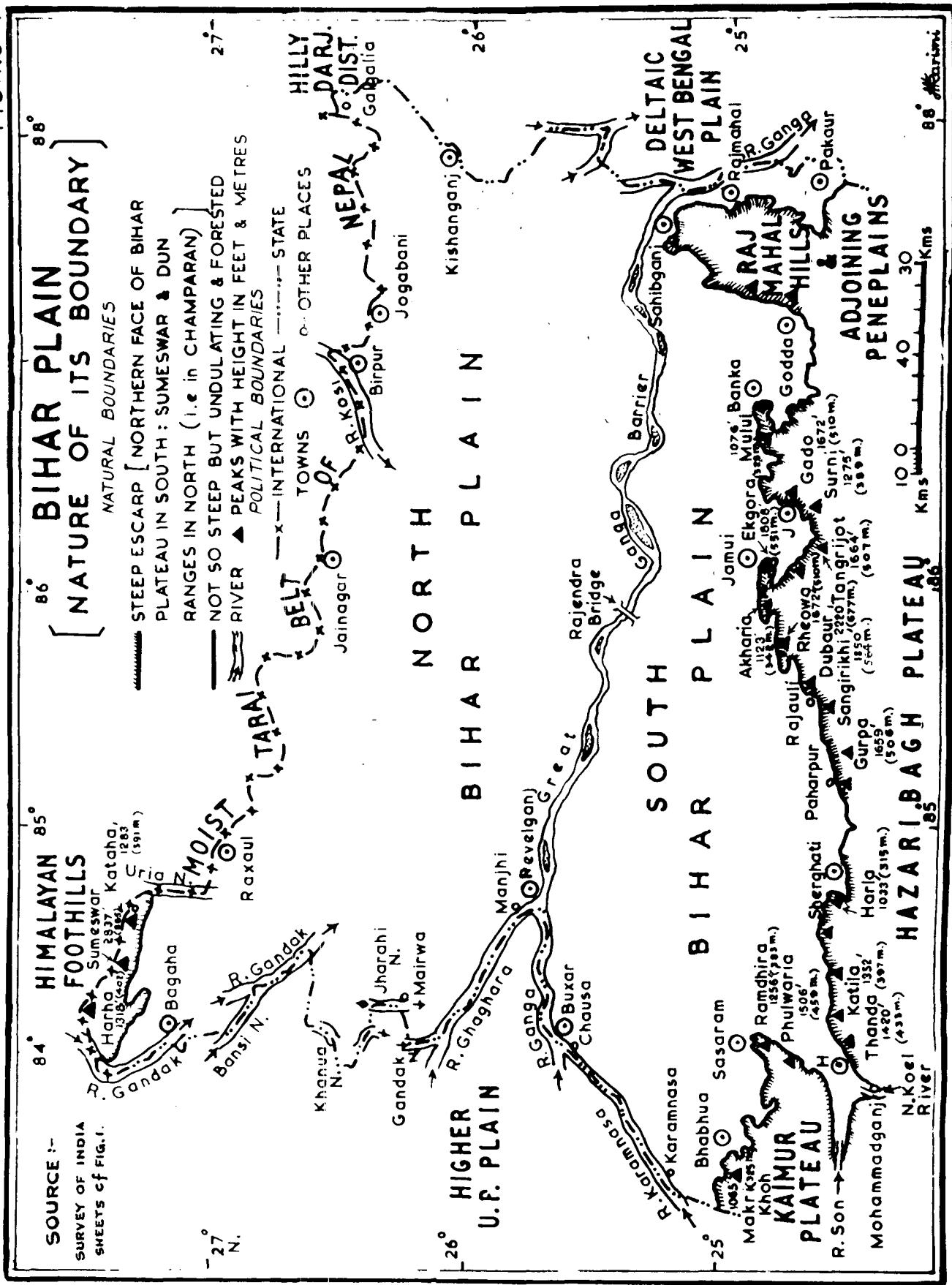
6. It was through Bhikna tori pass that the British force marched into Nepal in 1814-15 - Hunter, W.W. - S.A.B. - Tirhut & Champaran Vol.14 (London 1872), Page 221.

sufficiently high altitudes. The notable hills from west to east that go to make a continuous scarp are Gurpa Hills 506 metres or (1659 feet), Singirikhi (564 m. or 1850 ft.), Dubaur (677 m. or 2220 ft), Budua (555 m. or 1821 ft), Tiktikwa (623 m. or 2043 ft), Dumra Kāl (403 m. or 1321 ft), Pachmma (331 m. or 1086 ft), Akharia (342 m. or 1123 ft), Chattna (611 m. or 1676 ft), Basanth (422 m. or 1385 ft), Sandela Pahar (317 m. or 1041 ft), Meag Pahar (333 m. or 1091 ft), Ekgora Peak (551 m. or 1808 ft), Giddhoswar and Laldaiya Pahar. Near Laldaiya, Kiul river breaks through the range by a narrow gorge and debouches on the Jhajha Plain in Monghyr district. To the east of Laldaiya a semi circular range extends from near Laldaiya Pahar on the west to Gado Pahar near Jhajha in the east. The important hills forming a continuous semi circular scarp and enclosing the narrow Jhajha plain, are from west to east Tongrijot (507 m. or 1664 ft), Surni (289 m. or 1275 ft), Dajwa (380 m. or 1248 ft) and Gado (510 m. or 1672 ft). From Gado peak near Jhajha the boundary, following the crest of hills all arranged in a south-west to north-east direction, extends to Banka town in the Bhagalpur district. East of Banka town in Bhagalpur and Santhal Parganas, it extends through an undulating and highly dissected topography generally marked by gentle scarps; while in the extreme north east and eastern section of Santhal Parganas the steep scarped Rajmahal Hills form a sharp boundary over the narrow Gangetic Raparian tract.

Figure 6 shows that the contour line of 150 metres (approx. 500 ft.) approximately delimits the 'Bihar Plain' in the south. In north-western Santhal Parganas, however, much of

the land west of 150 metres contour is also distinctly rugged. It is much dissected by streams that rise from the Rajmahal Hills in Santhal Parganas. Besides, it is also covered with thick vegetation. As a result the contour line of 90-120 metres (300-400 ft.) may be taken as the delimiting line here. It may be noted that throughout its wide length from west to east the southern boundary on account of the presence of steep and deeply dissected scarps of Bihar Plateau, presents a sharp contrast with respect to the 'Bihar Plain' and is therefore quite distinct. The access to the plain from the interior plateau is not quite easy. There are certain lines of comparative ease for access to the plateau such as the valley of the Son and its tributary North Koel. This belt is now traversed by the Gomoh-Daltonganj-Sonenagar loop of the Eastern Railway. By way of the Grand Trunk road too, the access to the west to the Son re-entrant is possible only after a difficult passage through steep descent near Barachatti. Even the Eastern Railway destined for Bihar Plain from West Bengal has to face steep scarps.

Towards the east although the State boundary is delimited by the Ganga and its tributaries, yet for the most part specially north of the Ganga, the boundary with West Bengal is based on the definition of a village boundary as the revenue unit, and more specially north of Barsoi, the boundary lies generally 182 metres (200 yards) to the west of the National



Highway connecting Dalkola, Kishanganj and Chopra with Siliguri.⁷

Unlike the eastern boundary where 'Bihar Plain' overlooks the deltaic lands of West Bengal, the western boundary physiographically is not quite distinctly marked. However on minute observation, one can note that the boundary between Bihar and U.P. unlike that with Nepal is not quite arbitrary. In the extreme north west the present channel of the Gandak or its old bed flows along the whole length of Champaran district. From Tribeni to Chitauni-ghat it is occupied by the present channel (Fig.4) while from Chitauni-ghat southward upto Khaira, the boundary follows approximately the old bed of the Gandak which lies to the west and runs parallel to the present bed of the river. The western boundary in Saran district, however is not well defined, but the boundary between Ballia district of U.P. and Saran district of Bihar on the one hand and Ballia (U.P.) and Shahabad (Bihar) on the other is occupied by the Ghaghara river in the former case and by the Ganga river in the case of the latter as far up-stream as Chausa. From Chausa southward to the extreme southern end at Bhuri, the whole length of the western boundary between the Shahabad district of Bihar in the east and the Ghazipur and Varanasi districts of U.P. in the west is occupied by the Karamnasa river which is a tributary of the river Ganga, meeting it near Chausa. (Fig.4)

7. Except for by passing Kishanganj town which lies in Bihar, the boundary runs from the junction of Bela Khagra and Khirdah Sandah and ends at the junction of Feringora, Belichaka pachim and Talsa. The boundary touches the junction of Hasanpur, Lohakanchi and Patna from where it follows the course of the Sudhanu river upto Mejhia.

Orogeny and Structure :

Prior to the Pleistocene period, Bihar Plain was probably occupied by a deep depression between the Peninsular Archaean Shield in the south and the Tertiary Alpine folds of the Himalayas in the north. As regards the origin of this pre-existing great depression, there are several views. Modern scientists consider it as a synclinal basin, a sag formed concomitantly with the elevation of the Himalayas to its north.⁸ The depression perhaps began to form in the Upper Eocene and attained its greatest development during the final (third) Himalayan Upheaval in Pliocene and Pleistocene and probably throughout its existence it has been filled up by thick layers of sands, clays and occasional organic debris. It is also largely accepted today that the accumulation of sediments took place on a gradually or intermittently subsiding surface. It is further believed that the tract north of the Motihari-Purnea line is of older (i.e. Pleistocene) alluvium or 'Bhangar' and there appears to be a gradual uplift of the region along with the uplift of the Himalayas; while south of this line upto the Ganga river which contains mostly new (recent) alluvium or 'Khadar'⁹ is tending to sink.

8. Krishnan, N.S. - An introduction to the Geology of India - (Madras, 1960), Page 48.

9. Dunn, J.A. - Memoir G.S.I. Volume 78, 1941, (The economic geology and mineral resources of Bihar Province) - (Calcutta, 1942) Page 8.

The great plain of Bihar, thus belongs to the last Chapter of the Earth's history and conceals beneath its deep Pleistocene and recent alluvium, the northern fringes of the Peninsular formations and the southern fringes of the Extra - Peninsular formations. It is a region whose origin and structure are closely connected with the formation of the Himalayas. It is a tectonic trough formed in front of the rising Himalayan chain and is a zone of weakness and strains caused by the severe crumpling of the rocks of the floor of the depression at the time of the elevation of the Himalaya, which has, not yet attained stability or quiescence.¹⁰ It has been guessed that there are faults and fractures at the bottom of the trough that cause earthquakes. Bihar Plain, as a matter of fact, falls within the great earthquake belt which traverses India from east to west and most of the Indian earthquakes, as one can note, have originated in the northern plains of India or from their peripheral tracts. The Bihar Earthquake of January 1934 gave indications of the presence of zones of disturbances, evidently faults, in the basement below the alluvium, parallel to the trend of the Himalayas.¹¹

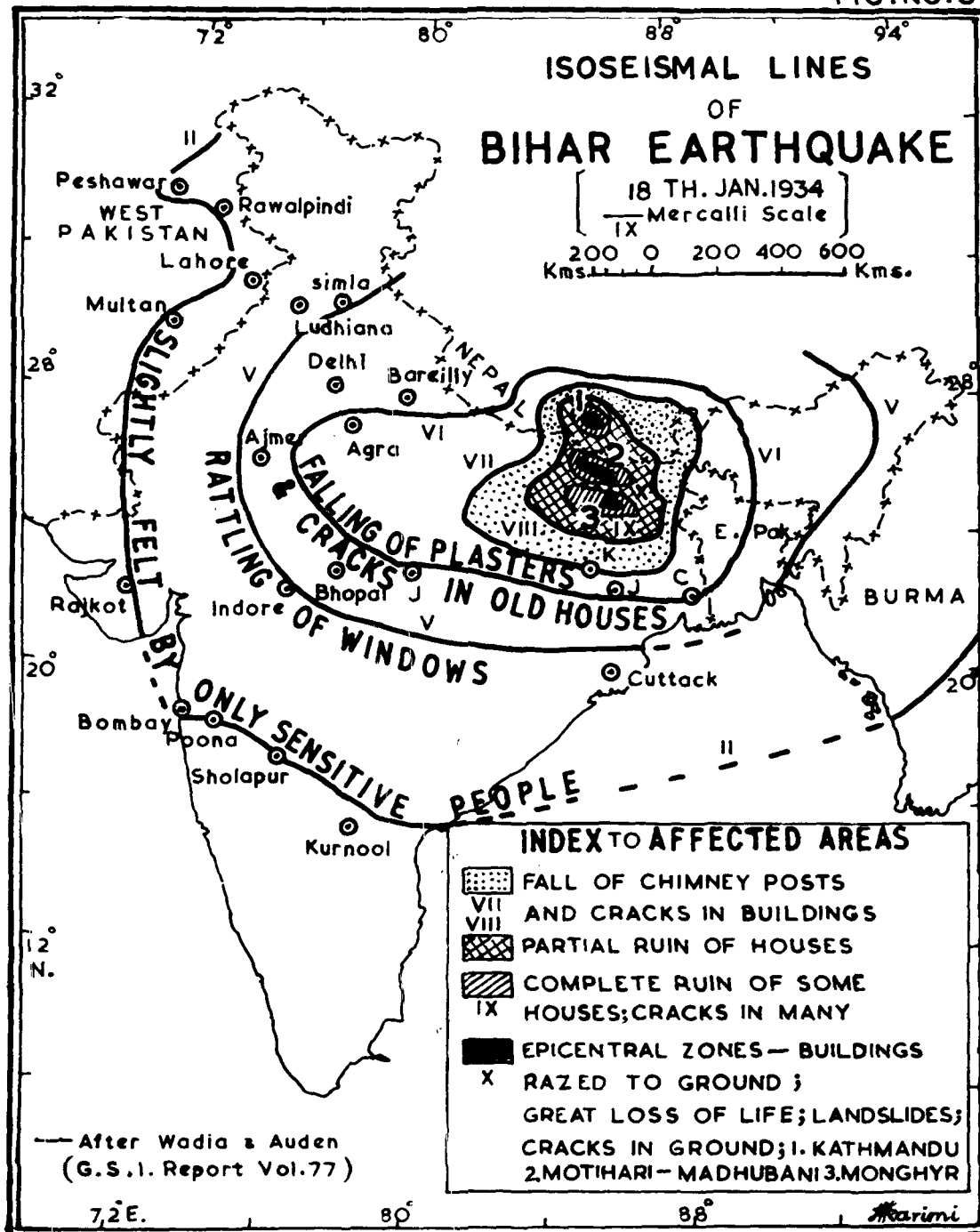
In area and intensity the earthquake of January 15th, 1934¹² devastated a large part of North Bihar equivalent to some of the biggest seismic disturbances in history. The main area

10. Wadia, D.N. - Geology of India, (London 1957), Page 41.

11. Krishnan, M.S. - An introduction to the Geology of India, (Madras, 1960), Page 530.

12. India in 1933-34 - Manager of Publication, (Delhi 1935) Page 52.

FIG.NO.5



of very severe intensity lay in Bihar and was in the shape of an irregular ellipse some 12,182 Sqr.Kms.(4,700 sq.miles) in extent, stretching 256 Kilometres (160 miles) east-south-east from the west of Motihari to Purnea and from the Nepal border to the south of Muzaffarpur and Darbhanga.(Fig.5). Some of the towns falling in the zone were severely damaged and were reconstructed. Roads and railways also subsided over considerable area. It will be worthwhile to assess the magnitude of the change caused by the earthquake in the towns as shown below :-

<u>Towns</u>		<u>Destructions</u>
Sitamarhi	..	Houses were totally or cent per cent demolished.
Madhubani	..	Houses were 70-80% demolished
Monghyr	..	Heavy loss of life(numbering about 12,600) and Main Bazar demolished.
Muzaffarpur	..	956 deaths occurred; wells were choked with sand; Purana Bazar was badly affected.
Darbhanga	..	310 deaths occurred but the general effect was less severe than Muzaffarpur.
Motihari	..	Buildings were tilted at all angles in the most spectacular position.

13. India in 1933-34 - (Delhi 1935), Page 52; Records G.S.I., Vol.68, Part 2, (Cal.1934); G.S.I. Vol.73 (Cal.1938); Wadia, D.N. - Geology of India - (London 1957), Page 44.

Geological deposits and their importance.

The geological formations throw much light on the occurrence of various minerals, types of soils and the geographic landscape too, to a great extent, depends upon it. The Bihar Plain is typical of Gangetic alluvium. It is covered with a thick mantle of alluvium and extends to a variable but unknown maximum depth. The greatest depth of the alluvium is thought to be within a few miles of the Himalayan foot-hills in a trough that extends WNS-ESE through Motihari where the thickness of the deposits may be of the order of 1,800 metres (approx. 6,000 ¹⁴ ft.). South from this the alluvium gradually thins out until it touches against the edge of the Bihar Plateau (Chotanagpur). North of the Motihari-Purnea trough line, the deposits belong to the middle or upper Pleistocene period and are known as older Alluvium or Bhangar. They are rather dark coloured and generally rich in concretions and nodules of impure calcium carbonate (nodular limestone) known as 'Kankar' of various shape and size. The older alluvium deposits usually form slightly elevated tracts generally above the flood level in specially Bhangar uplands of Saran, Champaran and Muzaffarpur districts or occupy border zone along Nepal where the rivers have cut through them to a lower level. Kankar obtained from these older formations of the Pleistocene age is extensively used for lime and cement making and for road construction. These deposits also yield large quantities of

14. Dunn, J.A. - G.S.I. Vol.78, (Calcutta 1942), Page 6

salt-petre (potassium nitrate), and reh. Some reh, a saline efflorescence mainly composed of the sulphate, carbonate and chloride of sodium which is found in the western section of the Bihar Plain in Saran and Shahabad districts. The presence of reh generally makes the soil useless for cultivation. The substance is however utilised in some of the rural areas for the washing of clothes. The newer alluvium usually known as 'Khadar' is still in the process of formation and belongs specially to the late or upper Pleistocene to recent age. The fossils in it are mostly those of animals still living. These deposits occur at a lower level than the Bhangar and are confined chiefly to the vicinity of the present river channels, such as in the eastern lowlands of North Bihar or in the lower alluvial plain of South Bihar. They are characterised by scarcity or absence of calcareous matter or Kankar and are often of light colour. They contain, however, tenticular beds of sand and gravel and peat beds. These new deposits of silts, clays and fine sands furnish an unlimited supply of clay which is the sole raw material in the vast plain for the manufacture of earthen-ware, bricks and tiles.

But the Bihar Plain is not merely a zone of the older alluvium (Bhangar) of the Pleistocene and newer alluvium (Khadar) of the recent dates. If a traverse is made south of the 90 metres (300 ft.) contour line in general, the Gangetic alluvium is seen to thin quickly and the surface of granite and metamorphic rocks rise gradually south-wards. Projecting above this surface of the plain there are ridges of resistant

rocks of Archaean age, of Dharwar and Vidhyan formations. It can be suggested that much of the surface material of the old plain along the northern out-skirts of Bihar Plateau is derived partly from the parent rocks of Archaean origin that lie not far below the surface or are derived on account of the weathering of the massive homogeneous granitoid and porphyritic gneiss which now stands as great domes such as the Mandar Hill in the upper Chandan Plain of Bhagalpur district. Even the newer alluvium in the lower Chandan Plain is underlain by gneiss and detached patches of these occur isolated in the alluvium near Purnya and Kheri and in the Ganga at Colgong and Patharghatta. The white clays and sandstone, about 30-45 metres (100-150 ft) thick forming Patharghatta hill, belong to Damuda rocks which is the store house of Indian coal. These rest on gneiss. The Damuda clay furnishes the great bulk of the material for the pottery works at Patharghatta.

To the east of Patharghatta, the sandstone is overlaid by strong beds of dark green basaltic trap which appears to out-crop near Pirpainti or near the Rajmahal hills along Sahibganj, Tin-pahar, Barharwa, etc. These mounds or hills are all outliers of the great trappean formations of which the Rajmahal hills are composed. These are capable of affording an inexhaustible supply of road metals and is today quarried at most of these places and are supplied to Farrakhadam or Calcutta in West Bengal or for the construction of National Highway near Barauni and Begusarai (North Monghyr).

The stone and salt quarries are characteristic features

of Kharagpur and other isolated hills of Monghyr district. Kankar and nodular limestone is extracted for making metalled roads. Slate quarries are extensive in Abhaipur region. Some iron ore is quarried near Bhimbandh. A sulphuret of antimony from the southern fringe zone of the Kiul valley (Chakai-region) is extracted and sold under the name of 'Surma'.

Some of the hills of Gaya and Patna district are also equally notable. The Rajgir group of hills here is composed of igneous rocks and for the most part of a foliated gneiss. Owing to the predominance of massive beds of quartzite, these stand out as abrupt ridges. These have been further affected to a great extent by contact metamorphism from the intrusion of great masses of granite and coarse granitic pegmatites by which the slates have been further transformed into crystalline schists. The Rajgir hills consisting of slaty schists and quartzites are less metamorphosed but contact effects are well seen in the Maher hill. The Barabar hills 6 kilometres (4 miles) to the east of Bela station in Gaya district consists chiefly of granite without any vestige of stratification. This is quarried locally for building materials. The hills around Gaya town are noted for quarries of black pot stone. This is polished and carved into vases and figures of gods and animals.

The Son Plain in general has gradually been overlaid by alluvium and rocks of the porcellanic formation underneath which Vindhyan rocks are said to rest. The outcrop of the Vindhyan rocks at Baninagar along the east coast of the river Son in Gaya district can be a testimony to the above fact.

FIG. NO. 6

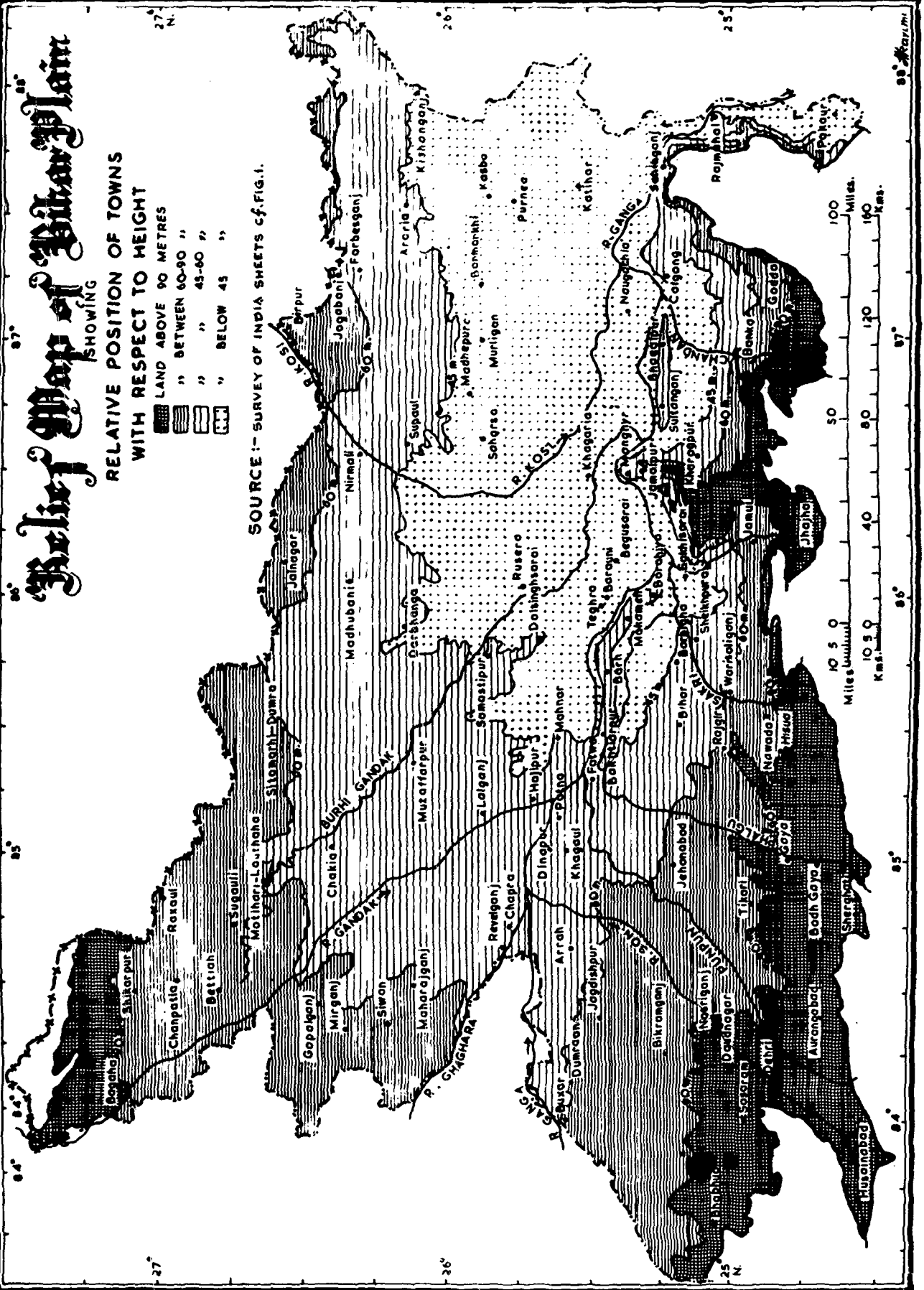
Relief Map of Bihar & Orissa

SHOWING

RELATIVE POSITION OF TOWNS
WITH RESPECT TO HEIGHT

- LAND ABOVE 90 METRES
- " BETWEEN 60-90 "
- " 45-60 "
- " BELOW 45 "

SOURCE: SURVEY OF INDIA SHEETS OF FIG. 1.



Close to the Shahabad upland (Rohtas Plateau) quarries of sandstone, shale and limestone occur. The Kaimur sandstone constitutes an excellent building material and has been quarried at Karaundia and Dhandhanr near Sasaram, whence it is conveyed to Dehri to be utilised in the works connected with the construction of roads, canals or bridges. Rohtas limestone (1.5 metres or 5 ft. thick) and Bijaigarh shale (45 metres or 150 ft. thick) are also extensively quarried. The former is a fine-grained and evenly bedded rock largely burnt for lime, while the latter is intensely brittle and splintery and black in colour.

Physiography & the natural regions -

The Bihar Plain lies in the transitional section between the upper Ganga Plain and the deltaic low-lands of Bengal, and forms a major eastern part of the Middle Ganga Plain. The whole plain in general slopes towards the east as is evidenced by the flow of the Ganga which flows specially in its southern section from west to east. The Ganga, as a matter of fact, divides the Bihar Plain into two distinct sections viz. North Bihar and South Bihar. So effective is the barrier between these two physiographic divisions that there is no bridge over it except that at Mokamah (opened in May, 1959).

North Bihar -

Figure 6 will show that the Ganga from Buxar to Rajmahal flows close to the southern margin of the great alluvial plain. This is due to the enormous quantity of silt brought down by the Himalayan rivers and the comparatively

small supply furnished by those streams which debouch on to the Ganga Valley from the south. The northern portion of the Plain has consequently been raised and the main drainage of the whole area is forced to find its way as close to the hills of the southern margin as it can. As a rule much of this depositional plain is composed relatively of higher but flat 'Bhangar' lands through which the rivers cut their 'Khadar' valleys at depths ranging from 15 to 60 metres (50 to 200 ft.), below the general level. It is important to note that North Bihar is traversed by a series of southward flowing tributary streams such as the Ghaghra, the Great Gandak the Burhi Gandak, the Kosi, etc. which all ultimately drain themselves into the Ganga in the south. These Himalayan streams emerging from the outer Himalayas, deposit huge loads in the shape of alluvial fans etc. which sometimes touch or even extend southwards in the Bihar Plain too. These are due to the fact that the gradient becomes gentle and the swiftness of the current is checked, so that the streams tend to deposit their loads. Besides they take a meandering course. In the northern tract of the North Bihar Plain, however, apart from the mighty Kosi and others, streams generally show here less tendency to flooding and prefer rather to scour their beds and banks, so that they usually remove the older alluvium from the higher northern tracts and redistribute them further down streams in the southern section. In the southern section, on account of

15. Oldham, R.D. - Mem. G.S.I. Vol. 42, Part II (Calcutta 1917)

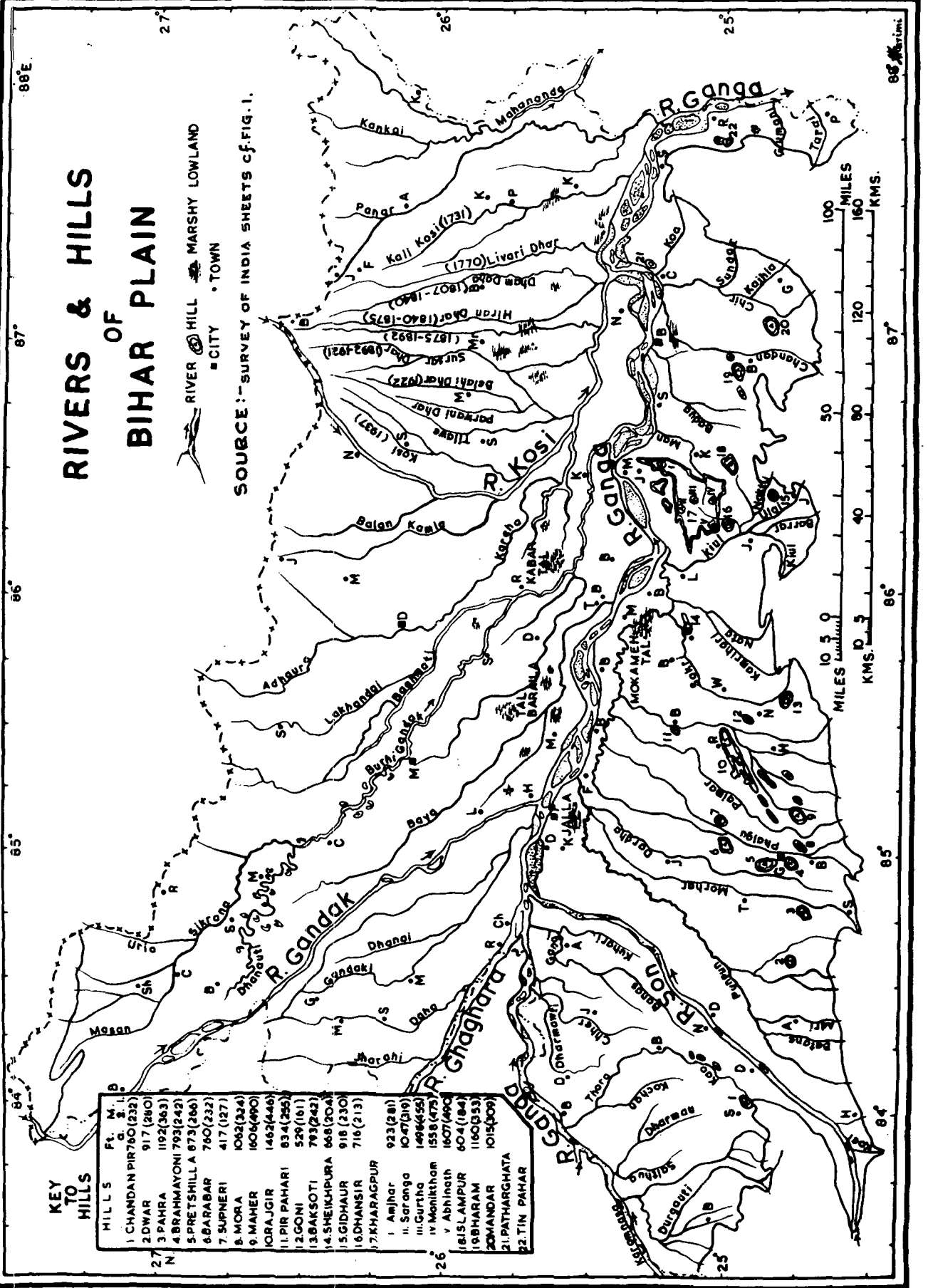
16. Oldham, R.D. - Medlicott & Blanford - A Manual of the Geology of India - Page 444.

FIG. NO. 7

RIVERS & HILLS OF BIHAR PLAIN

RIVER HILL MARSHY LOWLAND
CITY TOWN

SOURCE: SURVEY OF INDIA SHEETS CF. FIG. 1.



greater flatness and low lying nature of the region, there is thus a constant tendency for streams to change their course. They very often cut across the meanders and split up into a number of channels, so that there is not only the general tendency of re-distributing the alluvium within its bed and banks, but rather the alluvium is spread far beyond the river banks, over a greater part of the surrounding country on account of flooding. Flooding is thus a characteristic feature of the southern section of the North Bihar Plain.

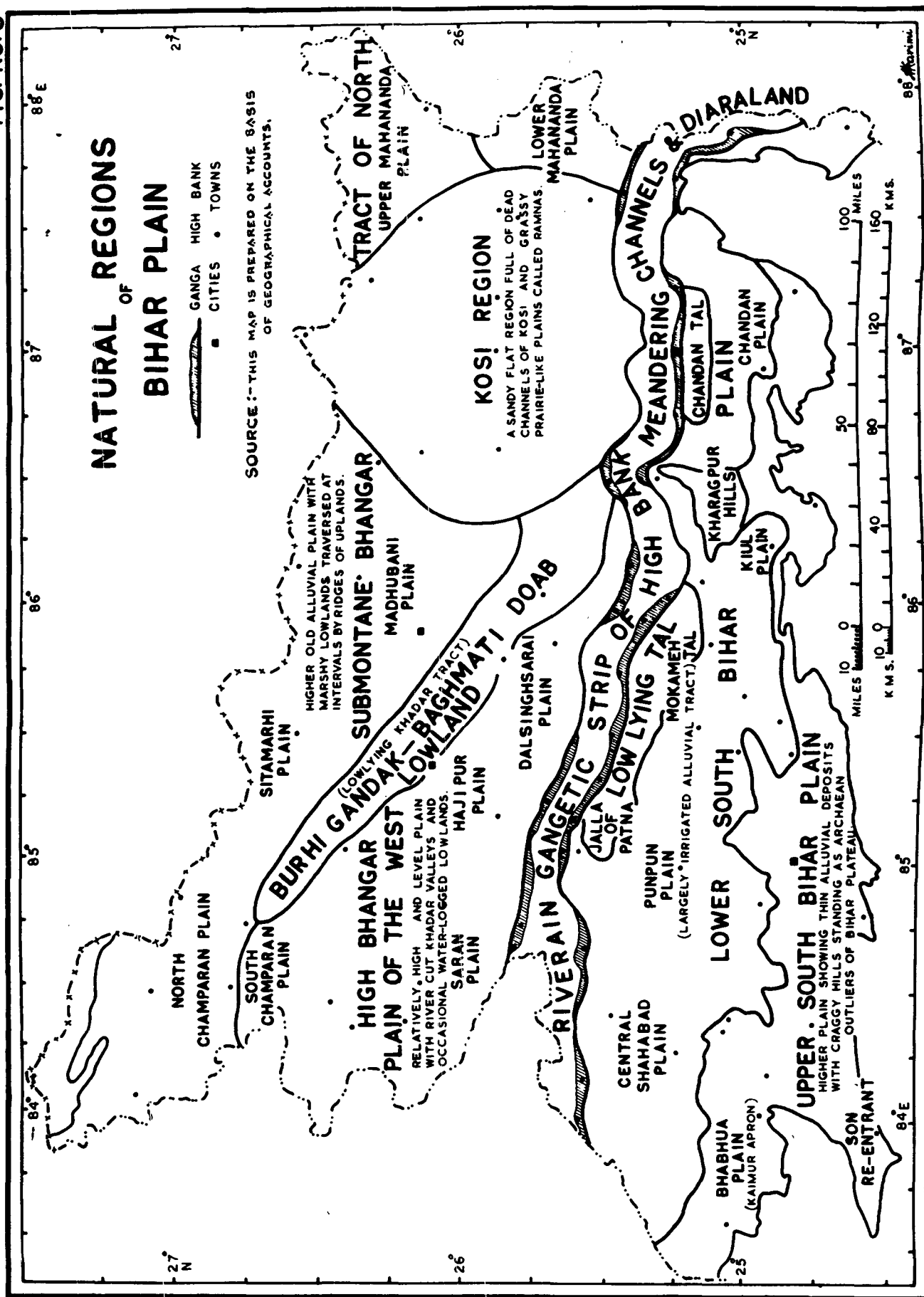
It will be seen from Figure 7 that in the North Bihar Plain, there occur no hills which might break the monotony of the level topography. There may be slight elevations here and there but these are either the sites of some ruined towns or sacred places of past days or may be the nodular limestone uplands occurring specially along the Nepal border. But these too never assume the appearance of a hill. The only exception is that of Chhota Pahar in Purnea district. It is a small hill of nodular limestone. Topographically however the plain is remarkably homogenous and for hundreds of kilometres the only noticeable relief is that of flood plain bluff and belts of ravines along some of the larger streams. On minute observations, however, it is evident that important surface differences occur on account of the 'Bhangar' (older alluvium) deposits which have formed higher land in comparison to the lowlands that are occupied by recent 'Khadar' (New alluvium)

deposits. Besides these main relief and structural differences, appreciable topographic changes can also be noticed which are associated with the numerous shifts and diversions of the rivers. North Bihar can thus, be divided into distinct tracts viz., (a) the 'Bhangar' lands of the west, usually occupied by 'Chauris' here and there (b) the Burhi Gandak-Baghmati Khadar Doab which is subject to great inundations during the rains, and forms a lowland of marshes and jhils, (c) the submontane alluvial undulating tract of Bhangar deposits of the north, (d) the Kosi flood plain - vast low lying sandy grassy country scarred with abandoned channels of streams which have shifted westward and cause enormous devastation by flood or by spreads of micaceous sands and (e) The Gangetic riverain strip (Fig.8).

A - The 'Bhangar' plain of the west - Starting from the Ganga northwards upto Burhi Gandak, the entire area of Saran district, some southern section of Champaran, ¹⁸southern half of Muzaffarpur and west central anchals of Samastipur subdivision of Darbhanga district present a slightly higher but level plain land. There is a gradual slope from north western corner of Saran (Kuchai Kot - 68 metre or 223 ft.) to Begusarai Subdivision (approximately 30 metres or 100 ft. a.s.l.). The slope is almost imperceptible and the entire area, although slightly higher than other parts of North Bihar Plain, presents the appearance of a level plain without any elevation except the mounds which mark the sites of old fortresses or of deserted villages. Besides the Khadar valleys cut by major streams draining through

18. i.e. the Govindganj, Kesaria and Kalyanpur anchals of southern Motihari subdivision.

FIG. NO. 8



the area the uniformity of this level plain is also broken here and there by the depressions and marshes that dot the entire area. These depressions are specially marked in the south-eastern part of Muzaffarpur district where there are small 'Chauras' (water logged depressions) the largest of which is Tal Braila.

The Burhi Gandak-Baghmati Khadar Doab Tract - It is a narrow but considerably long belt running in a north-west to south-east direction from Motihari in the Champaran to Karagola in Purnea where the Kosi meets the Ganga. It is the lowest lowland in the whole of North Bihar Plain. It consists of Khadar Plains cut down by the mighty rivers like Burhi Gandak, Baghmati and Kosi. These rivers are relatively narrow in their upper parts but open out and become broad in their lower courses. The actual river beds in these flat low lands, specially in their lower aggraded course, generally run along level higher than the adjacent land which is, therefore, liable to inundation during rains. Beneath these high banks lie the basins in which the surface drainage collects. The Burhi Gandak-Baghmati doab land of central Champaran, Muzaffarpur and Darbhanga is relatively level and forms a distinct lowland section with innumerable long semi-circular lakes in all directions due to the shifting courses of the Burhi Gandak. This lowland section is subject to great inundations during rains. Indeed the Turki embankment has been constructed just to ward off the floods on account of Burhi Gandak. On account of the yearly inundations, a greater portion of this lowland section is covered with marshes and lakes specially during the rains. The chain of 43 lakes running

through the central part of Champaran district (Dhanauti lowland) is notable. These lakes of which the largest are at Ialsaraiya, Sugaon, Turkaulia, Motihari, Pipra, Siraha, Nawada and Titeria, extend over an area of 360 sq. kilometres (139 sq. miles) and evidently mark an old bed of the Great Gandak, their depth varies from 1 metre to 6 metres (3 ft. to 20 ft.) and the water which is considered very unhealthy never dries up. From Dhanauti lowland in the west in central Champaran to Varisnagar lowland in Darbhanga district, this great Burhi Gandak-Bagmati Doab extends further eastward to include the Rusera-Bahera lowland in Darbhanga and Kabar Tal depression of Longhyr North. Eastward from Khagaria as far east as Haugachia Section of Bhagalpur, it forms a sub-region that may be called the Ganga-Kosi Doab. It is occupied in the main by the present channel of river Kosi.

C - The Sub-montane Bhangar tract - The higher tarai lands of northern Champaran along the foot-hills of the Sumeshwar and the Dun ranges and extending a little southward but a long way eastward to include the North Champaran Plain, Sitamarhi-Madhubani Plain of Muzaffarpur and Darbhanga districts, and the whole of north western tract of Purnea district (Mahananda Upland), present an entirely different character. The gradient is doubled and even trebled (as in Champaran district) and the sandy beds rise and undulate considerably and include pebbles which gradually increase in size as one proceeds towards the north. These elevated northern section of Bhangar (older alluvium) deposits have most of the characteristics of a sub-montane alluvial tract. The belt in the main is higher than the southern counterpart, but

even in these older and higher alluvial plains of Bhargar deposits, lowlands, are not quite uncommon. Sitamarhi-Madhubani Plain for example is traversed by numerous streams and marshes but is also at intervals traversed by ridges of uplands.

D - The Kosi Flood Plain Tract - In between the Bagmati river in the west and the Mahananda river in the east excluding the Mahananda upland in north-western and Mahananda lowland in south Purnea district, the entire area is a vast lowlying plain inter-sected by numerous streams and marshes. It is a region which is liable to floods from both the Himalayan rivers as well as the over-flow of the Ganga over its northern bank. These rivers are inter-connected by numerous channels of considerable depth and width called 'dhars'. There is little high land in this section, the only elevation being the levees of the larger rivers from which the land slopes gradually inwards often meeting a similar incline from some other river. The inter fluvial plains are usually studded with chains of marshes frequently of great extension. The whole of this eastern section, as a matter of fact, can be regarded as the flood plain of the Kosi - a sandy grassy country (prairie like plains called 'Ramnas') seamed by old channels of the Kosi river which is constantly changing its bed. The Kosi and the various other Himalayan streams that drain through its lowlying section have larger independent basins or catchment areas within the Himalayas and a few of them penetrate behind the snowy main ranges. Erosion in their catchment area is extremely active specially because of steep

gradient, shattered rocks and torrential rain due to monsoons, and as a consequence enormous quantities of silt are brought down by each one of them. These rivers are, therefore, subject to great fluctuations in volume and course. The Kosi, for example, is specially notorious with rise of 9 metres (30 ft.) in 24¹⁹ hours. It is worthwhile to note that this river does not make deposits of silts like the Ganga, but on the contrary brings enormous amounts of coarse sand which cover the fields and make them uncultivable. As a consequence there are few flourishing towns or even big villages along its course, for they would be liable to be swept away or buried in sand. The amount of detritus and sand is so great that the beds are raised above the general level. This causes overflow so that the river has no permanent deep channel but tears through the country in numerous capricious channels. Its general shifting movement is to the west (i.e. cutting into the right bank) and two centuries back it flowed by Purnea town. Between 1934 and 1936, its lower²⁰ course shifted 20 kilometres (12 miles) to the west and today it flows close to Nirmali and far to the west of Supaul and Saharsa towns. A wide tract is scoured with its abandoned channels: the numerous Burhi (old) or Hara (dead) Kosis. The Kosi has been

19. O'malley, L.S.S.- Bengal District Gazetteer 'Sikkim'
(Calcutta, 1917), Page 49.

20. As mentioned in Abul Fazl's Ain-i-Akbari translated by Blochmann & Jerrett (Calcutta 1873)- Salim, G.H., Riaz-us-Salatin (Persian) translated by Abdus Salam, (Calcutta 1902) Page 36.

responsible for enormous devastation by flood or by spreads of
micaceous sand.²¹ How quickly and deeply it can overlay the country
is apparent from the fate of indigo factories which have been
abandoned owing to encroachments. In comparatively few years all
that can be seen of them is the chimneys of the buildings buried
deep in s²²and.

The Kosi Flood Plain is thus a 'sandy flat' full of
dead channels of the Kosi. In the vast expanse of the sands
radiating stretches of pasturage opening out into fine grassy,
prairie-like plains called 'Ramnas' are the other important
characteristic of the landscape. This affords sustenance to
cattle and sheep. The newly formed 'chars' or alluvial islands
are covered with dense high jungle of coarse grass forming best
coverts for wild animals.²³

E - The Gangetic riverain strip - The Gangetic riverain strip is
a narrow s²⁴trip of lowland covering on an average of width of
approximately 3 to 16 kilometres (2 to 10 miles) lying on both
sides of the main bed of the river Ganga. So far as the section
in North Bihar is concerned it is a low plain where the Ganga
takes an intricate meandering course and often makes sharp bends
leaving at places semi-circular channels to be called Chara or
Oxbow lakes. The braided pattern of the streams and shifting of
the channels are the main characteristics of this section and

21. Spate, O.H.K. - India & Pakistan - (London, 1954), Page 514

22. Ibid, Page 514

23. O'malley, L.S.S. - Bengal District Gazetteer - 'Purnea'
(Calcutta 1911), Page 3.

the region is subject to great variation with respect to width and aggradation at one end and degradation at the other. At one place the river appears to cut into its bank and wash away village sites and groves; at another the shore is receiving a new alluvial deposit to fill up the void left by the receding waters. Where the banks are high, it presents an effective barrier to the degradational action of the streams. Several such high banks occur close to the Ganga standing as natural levees and these afford good riparian sites for human settlements busy in trade associated with the river. One such high bank runs from Chapra to Dighwara and Paleza ghat in Saran district. Other equally important banks are from Monghyr ghat to Khagaria in Monghyr district and in the east along Kursela and Manihari ghat in Purnea district. These high lands are as a matter of fact, always liable to be cut away and the lowlands which lie behind these natural levees or high banks are regularly inundated every year by the Ganga floods which find their way through the drainage openings in its banks and so spreading over the inland country fill the large 'chaurs' or marshes which are so prominent a feature behind these high banks in Saran and Monghyr districts. Where the banks are sloping or low, the river bed sets up an eddy in the current which, therefore, becomes sufficiently stationary to deposit a portion of the sand which it holds in solution. The level of the 'diara' which is so far nothing but a heap of sand, then gradually rises as the water lying stagnant spreads a thin layer of clay and silt over the sand; and this deposit of silt deepens at every high flood until atleast

the 'diara' rises above flood level. The soil of such diara lands is extremely fertile and grows magnificent crops, but its growth is arrested by the river, altering its course so that the flood water does not cover it during the second stage of its formation, it remains sandy and barren. The southern fringes of Muzaffarpur, Darbhanga and Purnea districts afford good areas where flood waters spread far and wide so that specially in these sections the river extends during rains far beyond its average width of 3 to 5 Kms. (2 to 3 miles) and is often 15 to 16 Kms. (9 to 10 miles) broad. Indeed in Pharkiya pargana of Monghyr district in North Bihar, Ganga water spreads over the lowlying tract for about 32 kilometres (20 miles) to the north of the main channel. At places the Ganga not only overflows the country on its banks but also forces back the waters of the Gandak etc., rivers and indeed it inundates the land between the two Gandak embankments far above Hajipur. In these lowlands the river throws up extensive diara lands which are constantly changing and forming and reforming in most capricious way. Extensive sandy beds and diara lands have emerged out in the Ganga riparian tract of eastern districts of North Bihar.

South Bihar

In the portion of Bihar Plain stretching from the south of the Ganga to the outskirts of the Plateau, the alluvial deposits appears to thin out quickly southward. The effect of recent alluvial action is less marked here than in the North Bihar, specially towards the east where the outlying hills and the undulations of the Bihar Plateau approach more and more towards

the Bihar Plain until at Monghyr and Sahibganj they extend as far as the Ganga itself and offer an effective opposition to the river's oscillations which the more yielding alluvial soil in the western section is unable to prevent. The plains in the west are in general wider and the maximum width of some 137 kilometres (85 miles) occur along 84° 30' E. The plains narrow down gradually towards the east upto the Santhal Parganas where the Rajmahal hills abut almost directly on the Ganga and they become narrow Ganga Reverain strip and extend for a few furlongs on either side of the Sahibganj loop line of the Eastern Railway.

The alluvial tract in general slopes gently to the Ganga on the north and is intersected by several rivers and artificial irrigation channels. Along the southern bank of the Ganga, occasionally there occurs a strip of high ground about 6 kilometres (4 miles) broad which presents an effective barrier to the flood waters but sometimes when the flood water crosses the danger mark, it may either break through or find way through drainage gaps in the high banks into the lowlying areas just on the back of these elevated strips. Where the banks are open and sloping the Ganga water may even push back waters of some of the rivers and inundate considerable area to the south.

Although permanent marshes are of insignificant size in these plains of the south, much of the area specially in the lower parts of Shahabad, Patna and Bhagalpur districts are flooded in the rains. The Shahabad and Patna plains or the lowlying plains south of the Ganga show characteristics similar to that of the North Bihar Plain. They are bare of any pronounced

interruptions except for some hillocks, about 16 Kms. (10 miles) north^{of} Sasaram, the Pir Pahari near Bihar Sharif, the elongated hill east and south of Sheikhpura town or the Patharghatta hill east of Colgong in Bhagalpur district. But the surface in Gaya and extreme southern anchals of Patna district or the upper Kiul and Chandan plains of Monghyr and Bhagalpur districts, is interrupted here and there with hills either isolated or in groups which seldom exceed 300 metres (1,000 ft.) in height. In central Monghyr, however the hilly tract is an extensive range known as 'Kharagpur Hill'.

Physically, South Bihar can also be sub-divided into distinct tracts viz., (a) the narrow Gangetic riverain strip of shifting channels, diaras and high banks, (b) the Tal or Chaur lands, a treeless lowlying inundated country, (c) the lower extensively irrigated alluvial plains, (d) the higher southern plain with outliers of Bihar Plateau here and there and (e) the Kharagpur Hills. (Fig. 8)

A - The narrow Gangetic Riverain strip of high banks and diara lands - The chief characteristics of this section have already been discussed while describing the various natural sections of the north Ganga Plain. The Ganga while making sharp loops and bends in its course, appears at places to be dashing along the high banks while at other places it may appear to be avoiding its previous course, so that in its process of shifting it has thus produced many oxbow lakes, marches and sandy beds which often form good diara lands. Amongst the notable fringes of high banks affording

barrier to the flood waters of the Ganga, both in the past and present, and at places preventing the southern tributaries to join the main by diverting them for some distance to flow eastward, mention can be made of the high banks now occupied by the embankment of the main line of the Eastern Railway in Shahabad district, the high bank running from Maner via Patna to Barh and Mokameh and the 95 Kms. (about 60 miles) long and 3 Kms. (2 miles) broad raised limestone belt from Monghyr to Bhagalpur and Colgong, which all form natural and effective barrier against any inundations of the river in the south. Throughout the wide length of these above mentioned high banks the river, specially near Patna and Monghyr, appears to be dashing and cutting direct into the high banks; This belt of 3 kilometres (2 miles) width fringing the southern high bank of the Ganga is compact and usually densely covered with palms, date and jack trees. The mango groves from Digha to Barh and again from Sultanganj to Bhagalpur and Sabour make conspicuous landscape of these high land strips. Amidst these mango groves many important towns and cities of both past and present have been flourishing. Notable among these riparian towns are Patna, Fatwa, Barh, Mokameh, Sultanganj, Champanagar (Bhagalpur) and Kahalgaon i.e. Colgong (with the site of Vikramasila) which are all located over this narrow fringe of the high banks continue eastward upto Barh and even Mokameh, on account of the shifting of the course of the Ganga the main channel which once dashed Barh and other towns now flows far to the north and has left vast diara lands instead.

A similar example of the shift of the Ganga is met with

in the northern parts of Shahabad district. The high banks of the oldbed can still be traced past Buzar, Bhojpur, Belauti, Bihia, Arrah and Koilwar. The description by Hiuen-Tsiang, the Chinese traveller, who visited India in the 7th Century A.D. shows that the Ganga formerly flowed much farther to the south than at present. Similar is the case with the Son. It formerly flowed far to the east and joined the Ganga near Fatwa (Fatuha) in Patna district and the ancient town of Pataliputra was situated at its confluence with the Ganga. Since then the river has gradually receded further westward and made fresh channels for itself. Mention of this river in Ain-i-Akbari indicates that the river joined the Ganga at Maner and so was it even in 1772, as indicated in Rennell's Bengal Atlas of 1772. In Buchanan's ²⁴ time (1812), however, the river flowed into the Ganga about 5 kilometres (3 miles) west of Maner, but now the Son joins the Ganga about 16 kilometres (10 miles) higher up. ²⁵

On account of these shifts of either the Son or the Ganga, a great portion of the lowlying plain north of the high banks in Shahabad and north of Maner-Dinapur road in Patna district, is turned into sandy plains which often form rich diara lands after the thin alluvial deposit on the plain is made by the retreating and subsiding flood water each year. People rush to settle on this diara as the water subsides; and this sometime leads to pitched battles between rival villages of Diara people.

24. Buchanan, Francis - An account of the district of Bihar & Patna in 1811-12, Book I, (Patna 1912), Page 17.

25. O'malley, L.S.S. - Bihar & Orissa District Gazetteer 'Shahabad' & (Patna 1917), Page 5.
James

B- Tal or Chaur (Treeless lowlying inundated country) - Immediately close to and lying south of the fringing high southern banks of the Ganga, there usually occurs a lowlying country where the southern tributary streams of the Ganga appear to flow in a very irregular pattern. Being checked by the high land strip, these rivers, although so close to the Ganga, are rather forced to flow eastward in alignment with the general slope for miles together and are not able to meet the mighty river Ganga. At times of flood, the water of the Ganga sometimes over-runs the high banks at low levels or sometimes cuts across it at weaker points or may even find passage to these lowlying tract by way of the tributary stream itself. We may also note in the same connection that during the rains rivers like the Purnpun, the Phalgu, and the Paimar in Patna district, the Harohar and the Kiul in Monghyr district and the river Chandan in Bhagalpur district are so swollen and turbulent that they carry down with them enormous quantity of fine sands and gravel which are deposited in these section of the lowlying plains. Their beds are thus raised. The blocking of the mouths of the rivers partly due to silting and partly to the inflow of the water of the Ganga a large area of the land in the interior is inundated and helps in raising the beds of these rivers, and also turns large areas into marshy lands. The 'Jella' and 'Tal' section lying south of Patna city - Barh - Mokameh high bank in eastern Patna district, the Harahar-Harhochar flood plain in Monghyr district, and the Chandan lowlands of Chauras in Bhagalpur district, are notable Tal or Chaur lands of South Bihar.

The description of this land as given by Hiuen-Tsiang, the Chinese traveller who visited the region in, the 7th Century A.D. applies to it even now. The village houses in this tal area are huddled together on large mounds which become islands during the monsoon rains when the whole 'tal' is one great lake and boats are used as conveyance from one village to another.

South of Sultanganj-Nathnagar-Sabour limestone high-land strip the alluvial lowland of river Chandan is about six kilometres wide and extends the whole distance across the district of Bhagalpur west to east.

This 'tal' or 'jalla' or 'chaur' area, is subject to inundation every year. It is almost a treeless plain and is not much cultivated except in winter when it yields rich crops of wheat and pulses. At places patches are devoted to city gardens of vegetable and fruits for the towns located on the higher land strip immediately above to the north.

C - Irrigated lower alluvial plains - The main body of South Bihar Plain is a flat country of alluvial deposits whose formation is of high antiquity as compared to the riparian strip of the Ganga or the Jalla or Tal Section. It is for the most part very fertile, highly cultivated and densely populated. The soil is generally deep and a very tenacious clay intermixed with coarse sand. Nearly the whole of this large tract is irrigated by an elaborate system of canals, etc.

The rivers in this section flow from south to north and are all parallel to one another. They bring amount of fine sands and gravel during floods so that, their beds are thus

raised and specially on account of the blocking of their mouths due partly to silting and partly due to inflow of the Ganga water in the Tal sections a large area of the land inside is inundated with flood water on either side. Consequently not only Jalla or 'Tal' areas are overflowed, but a considerable area of this section in the interior is also temporarily waterlogged. It is equally true for all the rivers like the Punpun, Sakri, Kiul and Chandan. But since the independence of the country and on account of considerable developments during the Plan periods with respect to irrigation and flood control, much of the water of these rivers today is diverted into paveens, sahars or distributary canals, so as to check flooding of the 'Tal' or adjacent areas in the lower basin on the one hand and to be used for irrigation purposes on the other.

This relatively high lying plain as compared to the lowlying 'Tals' is generally rich in soil which is of a light greyish colour. Mango groves and palm trees are abundant in this section. Rice, and wheat are extensively cultivated throughout. But where irrigation facilities are available, specially in areas close to the rivers, the rich soils yield bumper crop of rice and sugarcane as we find on either side of the river Son in Shahabad, Patna and Gaya districts.

D - Older Upper Plains studded with residual hills - Usually south of the 90 metre or 300 feet contour line in Shahabad and Monghyr district and beyond 50 kilometres (32 miles) south of Bhagalpur town in the Chandan valley, the plain changes in character and begins to rise. In this part of the plain the soil is thin and

the water table relatively high as compared to that of the plains farther north. The availability of water near the surface leads to luxuriant growth of trees. Mahua tree becomes common; palms and mangoes disappear; cotton tree attains great size measuring about 20 metres and dhak jungles become prominent. The alluvial infilling in this part of the southernⁿ South Bihar Plain is shallow, a mere veneer and the plain in general is relatively high and the slope is from south to north. It is drained by rivers which debouch from the plateau to the south and flow more or less in parallel courses to meet the Ganga. But in dry season they dwindle into trickling streams or lines of pools in the midst of long expanse of sand.

Small craggy hills which were occasionally met in the monotonous and vast lower irrigation plains of the northern section now make islands or groups of islands of bare rock or scrub. These are outliers of Bihar Plateau and are made up of Archaean rocks. The most remarkable of these long lowlying ranges are the Ganjas, Bhindas, and Jethian ranges which extend from Brahmyoni (242 metres or 793 ft) near Gaya town or the Pragbodhi hill (Hara Pahar) near Bodh Gaya (Fig.7). In the north-east these two ranges broaden out south of the present Rajgir township to enclose a broad valley in which the ancient city of Rajagriha or Kusagarapura was built and which was surrounded by peaks of Vaibhargiri, Sonagiri, Sailagiri, Chatagiri, Udayagiri, Ratnagiri and Vipulagiri. Some of the highest peaks of these groups of hills are Rajgir (388 metres or 1272 feet) and Hanriya (446 metres or 1462 feet). Most of the

peaks in these ranges are alluded to by Hiuen Tsiang who visited India in the 7th Century A.D. These spots have been identified by A.Cunningham and well described in his Archaeological Survey reports for the year 1875-76 or in his famous book 'Ancient Geography of India' (Published in 1871).

Parallel to the Rajgir hills but lying to the west of them one can find yet another group of hills. These are isolated rounded hills and are at places more than 300 metres (1,000 ft.) above sea level. In the extreme south-west Dwer Pahar (280 metres or 917 ft.), Ranidih (273 metres or 897 ft) and Pahra (363 metres or 1192 ft.) lie in between Bogh Gaya and Aurangabad towns; while Pretshilla occupying a central location in this group is located to the north-west of Gaya town and is 266 metres or 873 feet high. In the extreme north is a group of smaller hills collectively called 'Barabar Hill' which lies 6 kilometres to the east of Bela Station (Patna-Gaya line) and rises to 232 metres or 760 ft. while close to it is the solitary peak of Kauwadol.

Lying to the south of the Rajgir groups of hill ranges and running parallel to them is yet a third group of hills which lies to the west of the line joining Hisua-Nawada and Warisaliganj towns. Maher hill in this group which lies about 16 kilometres to the east of Bodh Gaya rises from a spreading plain to a height of 490 metres above sea level. The Mandar hill (309 metres or 1015 ft) near Bausi (20 Kms.S.E. of Banka town) is a fine example of a great dome, weathered out of the massive homogenous granitoid and porphyritic gneiss.

E - The Kharagpur Hills - The southern part of Monghyr

district the hills form an extensive area known as Kharagpur Hills. These together with Bhajarua hill (124 metres or 405 ft), Dhansir hill (213 metres or 716 ft.) lying close to Jamui station, Islampur hill about 10 kilometres to the south of Kharagpur town and a few isolated peaks located to the east of Gidhaur railway station having heights between 150 to 300 metres constitute really a northern prolongation of the Bihar Plateau. They gradually converge towards Monghyr town and indeed dip into the Ganga as Backon Rock. Bounded by Kiul-Monghyr line of the Sahibganj loop of the Eastern Railway; Kiul-Jamui section of the main line of Eastern railway and the Jamui-Kharagpur-Monghyr road, these hills form an irregular triangular block. They consist of a number of steep ridges rising from the low ground on all sides, with scapped faces of massive quartzite in places. They are of irregular formation and do not run in any uniform direction. Generally speaking the range is a bold and striking mass of rocks covered for the most part with dense mixed jungle, but it contains valleys with patches of cultivation too.

Kharagpur Hills act as a great barrier between the plain of the Man river in the east and the Kiul Plain in the west. Indeed the Sahibganj loop of the Eastern Railway has to cross the northern most prolongation of this divide, only through a tunnel. A number of hot springs occur in the whole tract where the archaean metamorphic rocks outcrop and appear at the surface, e.g. at Bhimband, Malniyapur and at Karanandhari. These are probably associated with faults close to the southern border of the hills. The finest hot springs are those at

Bhimband where a maximum temperature of 150⁰ F. has been recorded.

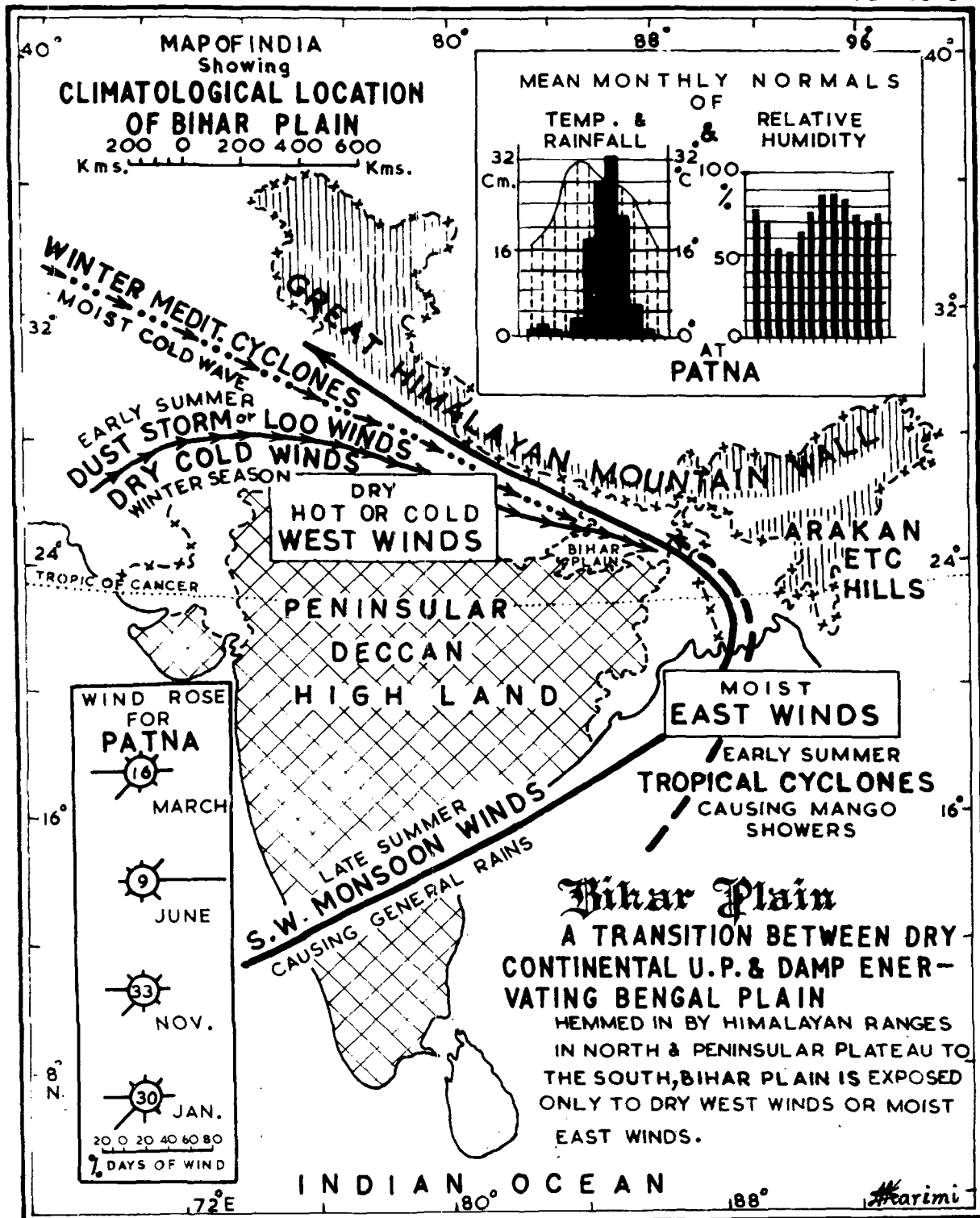
A number of notable peaks occur here and there such as Saranga (319 metres or 1047 ft), Gurtha (455 metres or 1496 ft), Manikthan (475 metres or 1558 ft), Abinath (490 metres or 1607 ft) etc., but the highest point is Maruk (496 metres or 1628 ft) above sea level, a table-topped hill covered with forest and crowned with a deep layer of laterite.

Climate

Although the Bihar Plain is situated almost entirely outside the tropical zone, its climate for about two thirds of the year i.e. from the middle of March to the end of October is of the kind usually characterized as tropical or tropical monsoon; and because of its location into the interior plains of India away from the Sea, is actually tropical continental monsoon. Hemmed in with the high Bihar Plateau in the south and lofty Himalayan Ranges in the north it is exposed either to the moist easterly winds from Bengal (mid March to mid October) or to the dry westerly winds from interior north-western plains of India (mid October to mid May) (Fig.9). The former specially during March to May blowing intermittently is dull, unpleasant and slightly enervating, but the winds of the wet monsoon months (June-September), bring sufficient humidity (80 %) to the region while the former i.e. the dry west wind blows intermittently with the tropical cyclonic 'Nor'-Westers' during March to May as hot dusty or occasionally as 'Loo' winds. In January and February the winds are cold and dry but sometimes depressions originating over the Mediterranean and some even as distant as the North Atlantic visit the Ganga valley and bring rainfall. The rain fall is highly beneficial to rabi crops specially when followed by brisk sunshine but if cloudy and foggy weather is prolonged rabi crops like potatoes and wheat may be adversely affected.

Essentially the Bihar Plain forms a transition between the wetter deltaic plains of Bengal and the relatively dry continental upper Ganga Plain of U.P., so that the heat during

FIG.NO.9



SOURCE :- MEMOIR. I.M.D. VOL 22, PART 3 & VOL 23 PART 7. ; CLIM. TABLES OF OBS. IN INDIA (1953);
ELIOT - CLIMATOLOGICAL ATLAS OF INDIA. (CAL. 1906).

summer is neither so intense and oppressive as in the western U.P. Plain, nor so enervating as in Bengal plain in the east. But the contrast between the eastern and western districts of the region is obvious. Shahabad & Saran being located farther and away from the sea have greater extremes of climate than the eastern districts. In Purnea the mean temperature varies from 17°C (62°F) in January to 29°C (84°F) in May and the maximum seldom exceeds 35°C (92°F). In Saran or Shahabad however although the mean temperature in January remains 17°C (62°F), the average maximum temperature rises to 38°C (100°F) in Saran, 39°C (102°F) in Shahabad. The contrast of dampness and dryness is also sharp. The annual rainfall at Kishanganj is $81.65''$ (207 Cm.) while the average for Purnea district is $68.24''$ (173 Cm). As against these, the annual average rainfalls at Mohania and Buxar in Shahabad district and Ekma in Saran district are $41.73''$ (106 Cm), $40.47''$ (103 Cm) and $37.80''$ (96 Cm) respectively, while the average annual rainfall in Shahabad district is only $43.59''$ (111 Cm) (Fig.11).

Three distinct seasons can be distinguished. The hot weather which commences from Mid-March and continues and ends by the middle of June. The rainy season commences from the middle of June and continues till the middle of October. The cold weather then sets in and lasts till the end of February or to the middle of March.

The hot season commences from mid-March and is ushered in by hot west winds. They are more steady in the beginning

but become less steady as the barometric pressure continues to fall in the northwest plains of India; so that the sea winds which are predominant in Bengal generally penetrate farther in land specially north of the Ganga along the sub-montane tract and the northern margin of the barometric depression of the Ganga valley. Though the prevailing wind in this month is, as a matter of fact, mostly westerly, intermittently easterly moist winds from the Bay of Bengal is also common (Fig.9). Accordingly, as westerly or easterly winds dominate, the hot season of the Bihar Plain alternates between dry hot, unbearable scorching weather and the less intense but far more oppressive damp heat, relieved for a few hours by a thunder shower or a simply dust storm. The hot west winds blow generally throughout the day, while during the night the winds are from the east. But the easterly wind though cool, is not healthy. The west wind on the other hand, though they parch up vegetation, and raise immense clouds of dust, are generally healthy, and even pleasant, for when they blow the interior of the house can be kept cool by means of screens of moist and scented grass (Khas-khas tatties); these are placed at the windows and kept constantly wet, so that the wind blows into the house after being cooled and tempered. In the beginning because of the prevalence of dry hot winds from west the humidity is generally below 50%. Temperature generally rises so that April in eastern and May in western section of the region is the hottest month. It is important to note that heat during this period is greater not only in the western districts, but is also in the region of Ganga river. The park-like nature of the

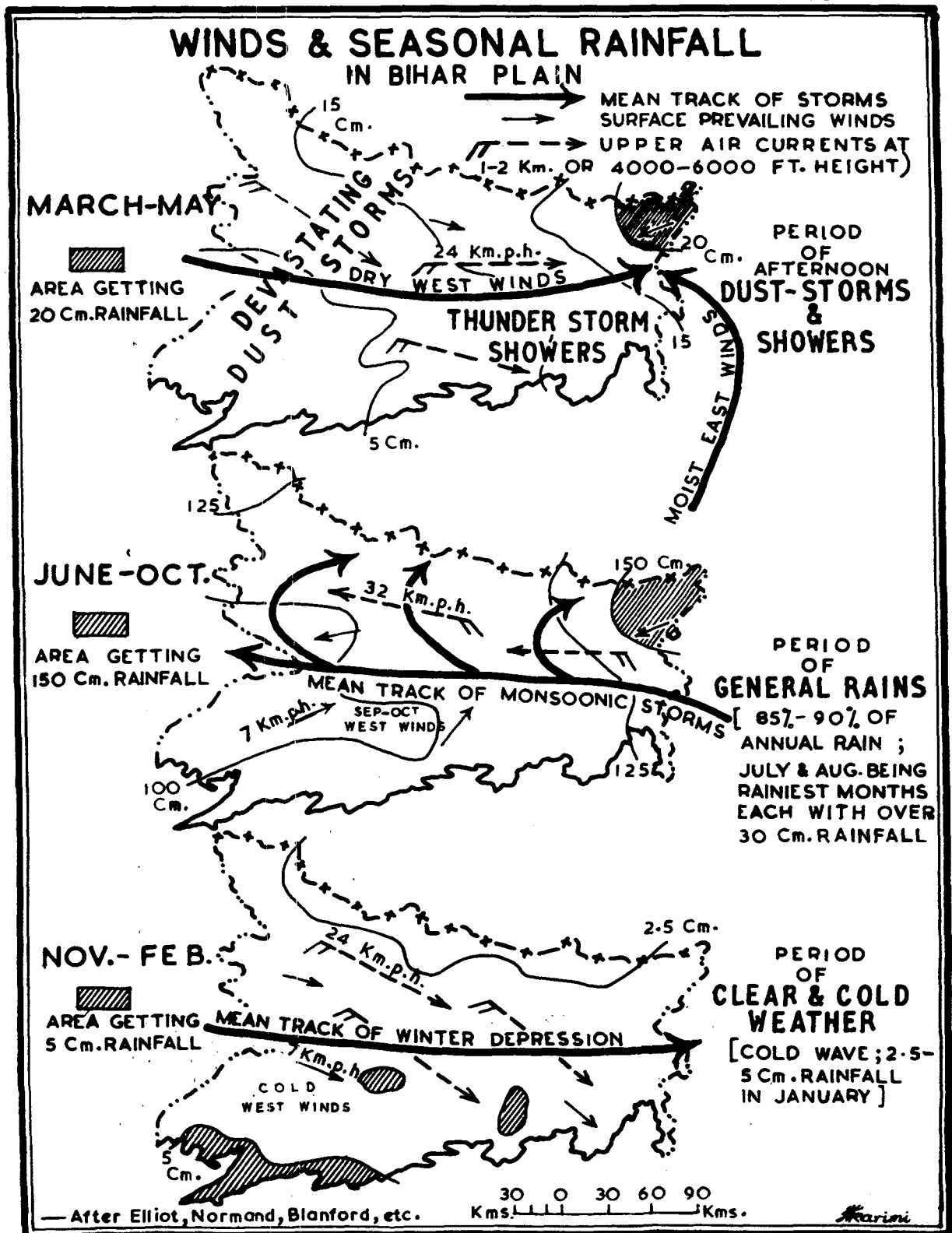
vegetational cover and marshes and chaurs of the northern plain make the heat not so oppressive while in the south plain because of the thin soil scanty vegetation absence of marshes and chaurs the heat is generally intense.

During April & May when the temperature, rises ordinarily with dry air and cloudless skies, a definite 'Low' is created in north-western India. In the drier west disturbances take the form of violent squalls of winds of short duration, accompanied by very thick dust of clouds, so thick that it is sometimes dark at Mid-day. The visibility is usually poor due to dust in this season. These dust storms cause a very welcome cooling of the air and a slight sprinkling of rain. They are most frequent in these months, the average being one or two a week. Towards the damper east ~~the~~ air contains much moisture owing to the moist east winds which begin to blow intermittently, so that the squalls known here as 'nor-westers' generally take the form of violent thunder storms. The April-May rainfall of this stage averaging to 12 to 20 Cm (5-8") is thus largely a precursor of the general rains ²⁶ and are called mango showers ²⁷ and are quite beneficial for the ripening of fruits like lichi, mangoes and for cultivation of jute specially in Kishanganj area of the Mahananda valley. The rainfall from nor-westers is thus 23.3 Cm (9.16") at Kishanganj, 15.5 Cm (6.10") at Purnea, 8.6 Cm (3.40")

26. Blanford Henry F. - Climates & weather of India, Ceylon & Burma, (London 1889), Pages 81, 208 etc.

27. Kendrew, W.G. - Climates of the continents - (London 1953) page 123.

FIG.NO.10



at Monghyr, 6.19 Cm (2.44") at Patna, 4.27 Cm (1.68") at Ekma and 3.20 Cm (1.26") at Buxar. (Fig.10). There is thus a general decrease in the amount as we go from east to west in accordance with the fact that these storms are more frequent in the east than the west. A sharp contrast occurs also with respect to north and south. North Bihar which lies in the natural path of the storms more particularly along the base of the Himalayan range gets more than the South so that Motihari gets 10.59 Cm(4.17")rainfall in this season as against 4.52 Cm (1.78") at Sherghati.

Both dust storms and nor-westers almost always occur in the afternoon or evening towards the end of a hot day. In case of nor-westers there is a lull sometimes before the storm approaches and for an hour or more the air is calm, until violent gusts of cool air blow out in advance of the storm, rising clouds of dust. Sometimes these gusts blow with great force blowing down trees and breaking their branches. The condition for the production of this character is that the lower layer of the atmosphere is warm and damp, that immediately above it perhaps at a height of 1200 or 1500 metres the air is dry and cool and the cloud is formed by the ascent of the warm damp air into the cold air upwards and temperature gets cooled by its ascent. Storms of this class are shortlived and are not an indication of any general or important disturbances of the atmosphere, however great their local effect may be. These storms are local eddies between opposite air currents the one above and the other below and they do not affect the general

movement of the atmosphere to any great distance. At Chapra a thunder-storm of the nature described above, broke over in all its fury and overtook Emperor Babar on 26th May, 1527.

On account of the creation of an intense 'Low' by the end of May, the intermittently blowing moist east winds again strength and totally displace the hot west winds. The air slowly becomes more charged with moisture. Humidity which was 50% during March and April rises to 86% and remains steady throughout July and August. The gathering clouds thus herald the approach of the rainy season. Sky may be overcast, temperature may fall and the rainy season starts. But its very start may be very uncertain for the 'monsoon' may burst as early as the last week of May or may be as late as first or second week of July, though in normal years it may come in June. Spatially, however, the rainfall shows a steady decrease from 181 Cm (71.12") at Kishanganj (comprising 87% of the total) in the extreme north-east to 95 Cm (37.34") at Buxar comprising 91% of the total in the extreme west; and there is also marked decrease from north to south for we find that in the extreme northern section say at Motihari the rainfall is only 119 Cm (46.87") comprising 88% of the total

28. Blanford, Henry F.- Climates & Weathers of India
(London 1889), Page 84.

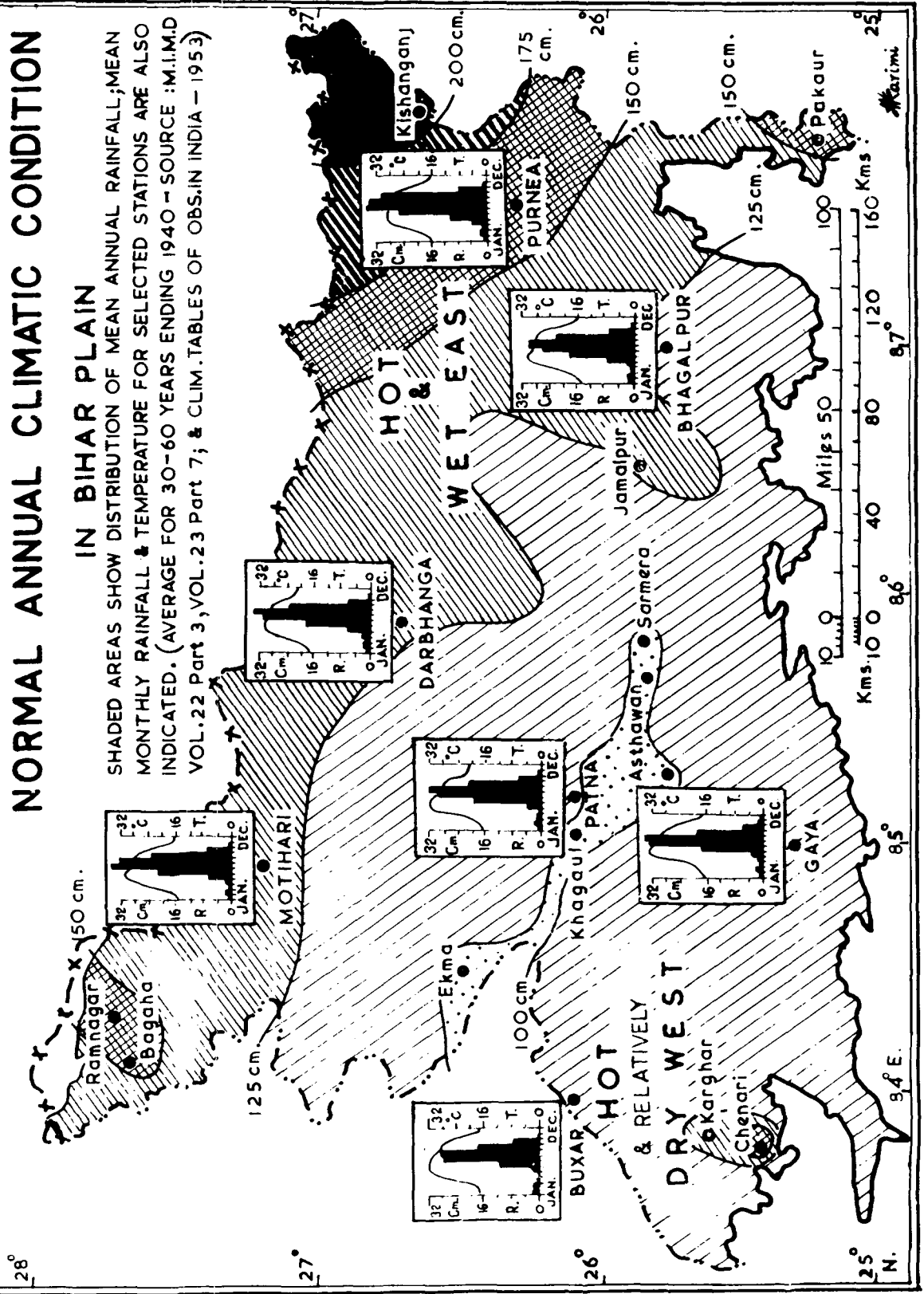
29. Emperor Babar in his 'Bayaz' states : "There was suddenly such a tempest and the wind rose so high that most of the tents were blown down..... so suddenly did the storm come on that I had no time to gather up my papers..... The storm abated in two gharis" -- Roy Choudhary, P.C.- Bihar District Gazetteer 'Saran' - (Patna, 1960) Pages 43-44.

FIG. NO. II

NORMAL ANNUAL CLIMATIC CONDITION

IN BIHAR PLAIN

SHADED AREAS SHOW DISTRIBUTION OF MEAN ANNUAL RAINFALL; MEAN MONTHLY RAINFALL & TEMPERATURE FOR SELECTED STATIONS ARE ALSO INDICATED. (AVERAGE FOR 30-60 YEARS ENDING 1940 - SOURCE : M.I.M.D VOL. 22 Part 3, VOL. 23 Part 7; & CLIM. TABLES OF OBS. IN INDIA - 1953)



annual falls while at Sherghati in the south the rainfall is only 100 Cm(39.29") or 91%. But it is important to note that inspite of this spatial difference, the prevalence of the monsoon at all places in this season is distinct and it constitutes about 88-90% of the total annual rainfall everywhere. Even in the Mahananda valley of north-eastern Purnea district where Nor'-westers cause 22-23 Cm(9") of rainfall during hot weather season, the rainfall during the wet monsoon months is as much as 89.4% at Kaliaganj and 87% at Kishanganj. The heaviest rainfall occurs in July and August and in each of these months over 30 Cm (12") of rain may be expected in the months of June and September, the month preceding and following the heaviest months of July and August show an average of 18-20 Cm (7-8"). (Fig.11). The only exception to this general picture is presented by Purnea district where July & August, the months of heaviest rainfall show an average of more than 38 Cm (15") while the months of June and September too have more than 30 Cm (12") of rainfall. As a matter of fact the average rainfall of each rainy day during these months is not less than 2.54 Cm (one inch), but a few instances of remarkable quantities recorded with 24 hours are also not uncommon. Although in their extreme intensity such showers are generally local, they are only part of a less copious but still heavy fall, often extending over thousands of square kilometers and lasting over 2 or 3 days. Such was the case on the 13th September 1879 when in addition to the torrential rainfall in

Purnea 20 to 30 Cm falls were registered in the adjacent districts around Purnea. There would seem also to be a tendency to a repetition of heavy falls in about the same part of the country in the same season. Thus only 9 days before the above numerous falls of 89 Cm (35") took place at Purnea, one of 29.2 Cm (11.5") had been registered at the same station and only 5 days previously one of 12.7 Cm (5³¹").

From the last week of September the monsoon currents begin to fall off in strength and if the west winds blowing strongly from March to April are, once again stronger than usual, the storms coming inland as 'Monsoon winds' from the Bay of Bengal recede eastwards and rainfall is consequently deficient. The variability in the month of October is thus not unexpected. In case there is a failure of rainfall in this month (which is not quite uncommon) the 'Hathia rain', as it is called, may involve both failure of standing Kharif crops and unfavourable sowing condition for the rabi crops. The air during this month is much cooler but the diurnal range of temperature is less than that experienced during the hot season. The relief from the intense heat is welcome, but the high humidity is enervating. Although the temperature in the day in September is not as high as in the month of June, the high humidity coupled with calm air makes the weather oppressive and suffocating.

The cold weather which begins from November is

characterised by pleasant weather. Because of the retreat of the moist monsoon winds, the days are bright and warm but the sun is not oppressive. The maximum temperature during the day rarely exceeds 23.9°C (75°F). The dry cold west winds are now common so that gradually the temperature decreases and the nights are characterised by bracing cold winds. January is usually the coldest month, the lowest temperature during which has been recorded as low as 2.44°C (36.4°F) in 1878 specially in western section. The cold weather is not free from temperate cyclones that originate in the Mediterranean Sea or over Iranian plateau and proceed eastward; so that sometimes they may reach Patna. Foul and disturbed conditions may then prevail in Bihar Plain and the temperature may fall down sufficiently to make the weather cold. In case some snow fall occurs over the Peshawar valley or in Punjab, these winds in Bihar appear as cold wave. On an average the cold weather gets 2.54 to 5.08 Gm ($1-2''$) rainfall by these temperate Mediterranean cyclones. This rain though small in amount, is beneficial to winter crops like wheat, barley and potatoes, provided it is sudden and is immediately followed by sunshine; otherwise if the cloudy or drizzling weather continues for some days it may seriously affect the crops.

The rainfall during this season at Buxar is 4.59 Gm ($1.81''$) at Sherghati, 4.98 Gm ($1.96''$) at Patna, 3.99 Gm ($1.57''$) at Purnea, 3.28 Gm ($1.29''$) while at Kaliaganj in the extreme north east only 1.45 Gm ($0.57''$) .

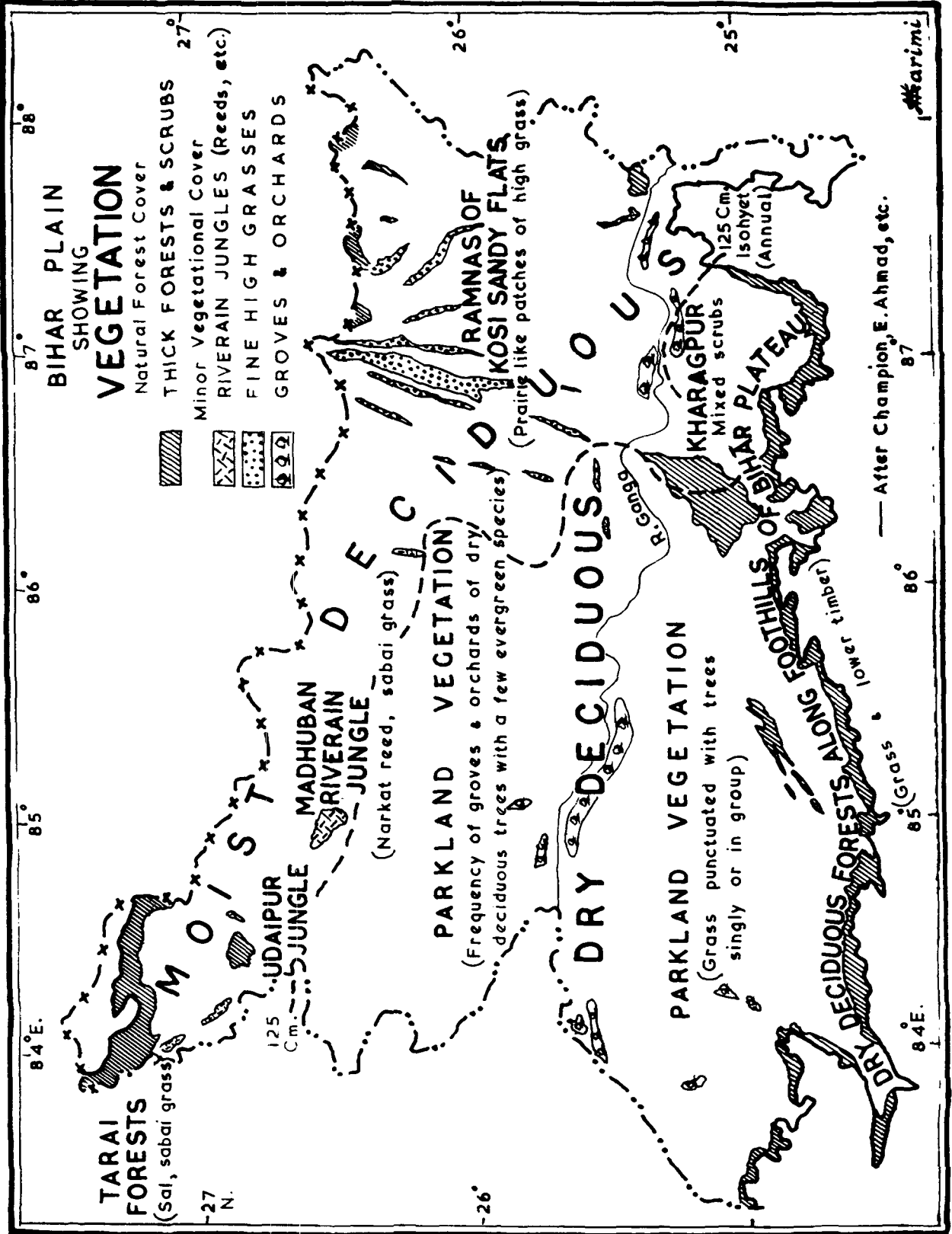
32. These figures are calculated from :
Gilbert T-Walker - Memoirs of Indian Meteorological Deptt.
Vol.22, Part III and Vol.27, Part 7
(Calcutta, 1924).

Vegetation -

Inspite of its topographic monotony the scenery of Bihar Plain with respect to vegetation has a charm of its own. The groves of bamboos and of mangoes, palmyra and date-palm, tamarind, pipal and other trees in which the settlements urban or rural, are located afforded a profusion of green vegetation very restful to the eye. In ancient days the major part of the plain which is now cut over and given to cultivation, was studded with thick vegetational cover, dry deciduous in the west and south and wet deciduous in the north and east separated roughly by the 127 Cm (50") isohyet. In not too distant historic past the plain of Bihar was thickly forested but the presence of population has led to large scale deforestation. Most of the Kaimur apron, the plain lying between G.T.Road and the Rohtas plateau and the Gangetic riparian tract in Santhal Parganas was thickly wooded so that passage to West Bengal by way of Meliaghati in the later case was very difficult. A century and half ago the northern fringes of the North Bihar Plain bordering Nepal was described as being covered with immense woods of sal and other timber which during the rains were floated down the rivers to the ship-building yards in Calcutta. But much of the original vegetation however, has been destroyed as a result of the extension of cultivation, reckless and wasteful cutting and unrestricted grazing by animals. The

33. O'malley, L.S.S. - Bengal District Gazetteer 'Purnea'
(Patna 1911), Page 13.

FIG. NO. 12



grassy and scrubland wastes of Mithapur-Phulwari area or Maner and Buxar region that once formed the battle fields or halting grounds for the advancing or retreating armies of the Mughals have all been occupied by green cultivated fields instead. But even to this date Bihar Plain contains about two thousand square miles of forests and apart from these localized sections of thick jungles or scrubs of stunted growth, patches of grassy plots and occasional strips of deciduous trees dot the whole plain both in the north and the south.

The natural large stretches of forests occur today along the Himalayan foothill and submontane terai in north-western Champaran where the flora gradually changes from tropical to Himalayan and comes under the moist deciduous group (Fig.12). The entire area occupied by these forests here is more than 770 Sqr.kilometres (300 square miles). Since these forests have now been vested in the State (1955) they are being scientifically maintained. The lower ranges and the terai beneath are covered with dense jungle. On sandy and gravelly soil the 'Sal' (*Shorea robusta*) is the typical but most valuable tree giving a good, hard and durable timber. The Sisham (*Dalbergia Sissoo*), tun (*Cedreia toona*), the red cotton tree (*Bomba malabaricum*) and Khair (*Acacia catechu*) are also common trees here. In the marshy terai tracts, bamboo, sabai grass and narkat reed are wide-spread. Besides the long stretch of forest two small but natural sections occur in the Bettiah-Madhubani (near Chokia town) area of Champaran district. The Bettiah jungle is known as Udaipur forest and occurs on a flat ground in the form of a crescent bordering the Sareya Mon lake near Majharia village.

It contains miscellaneous trees like Jamun, Khair, Sissoo and Semul. The Madhubani jungle is typical riverain cover found along the bank of the Sikrana river and contains ³⁴ sabai and narket followed in succession by Khair, Shisham and Semal.

A similar natural belt of forest skirts and ascends the hills of Bihar plateau. It has been pointed out that the northern limit of the main forests of the Bihar Plateau coincides well with the southern limit of the Bihar Plain. Hence thickly wooded areas lie generally across the physical boundary and are confined mostly to the high steep ghats or the high flat topped plateau above; yet, however, there are patches here and there in Gaya, Monghyr and Bhagalpur districts where these forests project north-ward so that small patches along the southern fringes in these districts are thickly wooded or sometimes covered with scrubland. An important section occurs north of the G.T. road but south of Rafiganj railway station in Gaya district; while a considerable area as open scrub jungle occurs in the Kiul valley and the Man river section east of Kharagpur hills in Monghyr district and a similar patch occurring along the upper Chanan and Chandan valleys in Bhagalpur district lies in this submontane section. The mixed forests that clothe the Kharagpur hills in the Monghyr district, are as a matter of fact a north-western projection of the great forest cover of the southern Monghyr &

34. 'Sabai' is a kind of grass which is specially used in paper industry.

Bhagalpur districts. But unlike the submontane tract of the north-western Champaran where the forests are Himalayan moist deciduous, the forests along the foot-hills of the Bihar Plateau are dry deciduous and the timber is relatively poor. Occasionally rich patches of 'sal' occur, but bamboo and sabai grasses cover extensively and are the best raw materials for the paper industry. The other conspicuous trees in this belt are Kend (*dispyres metanoxyton*) the black heart-wood of which forms the ebony of commerce and is in great demand among the Monghyr carpenters.

Apart from these natural sections of forests various types of minor vegetational cover occur throughout the region. The inundated lowlands with sluggish streams and lakes are filled with water weeds etc. River banks are usually studded with patches of jungles or thick vegetation. Mango, Shisham, Jamun and tamarind may occur in occasional patches. Palmyra and date-palms are also common trees occuring mostly nearer the village sites.

The inundated lowlands such as the lowlying tract of the Gandak flood belt, the Burhi-Gandak-Baghmati doab the lower courses of the Kosi-Balan rivers etc. or the Mahananda river in eastern Purnea in North Bihar and the lower courses of the Punpun, Paimar, Harohar, Rivers in South Bihar usually are filled with water weeds, the sides being often fringed by reedy grasses (narkat reed etc.) bulrushes and tamarisk. This type of vegetation is specially found in the Gandak flood plain, and in the lower courses of rivers in Muzaffarpur & Darbhanga districts.

The higher banks of most of the rivers both in the North & the South Plains, are usually studded with patches of jungles or thick vegetation. They provided a pleasant and cool setting to the numerous towns sited on such banks. A notable though small patch occurs in Madhuban on the bank of Sikrana river in (Champaran district). There is a relative abundance of mangoes and palmyra palm (tar) tree in the districts of Muzaffarpur, Darbhanga, Gaya and Patna. The juice of palmyra tree is put to various uses, food as 'tari', alcohol vinegar (sirka) is a country manufacture while fans, mats, baskets, etc. are prepared from its leaves, while again its trunk is used for roofing purposes and as fuel. Shisham is a strong and ornamental timber. All sorts of furniture are prepared from this wood. These grow specially along the river banks, canal embankments and roadsides where they are planted purposely to protect erosion of the embankment and give shade to the travellers. A good exception to the general landscape of the low plains specially in the North Bihar are the Kosi sandy flats. Here parallel longitudinal belts of fine grassy patches occur throughout the region. With high grasses, these prairielike plains are locally called 'ramnas'. These afford sustenance to great herds of cattle and numerous flocks of sheep. It is in the midst of these vast stretches of prairies, specially along the Ganga, that the newly built chars or alluvial islands of Kosi are covered with dense high jungles

35. The country of Magadh was once so much covered with palm trees that the early Muslims who had a new Kingdom at Bihar had remarked :-

' Turk, teli, tar,
In tino Bihar'.

of coarse grass, providing hiding places to wild beasts.

The upper plains in the South Bihar, show relatively a different character. The mango grove change to occasional trees, palms disappear and Mahua trees become prominent. The bush jungle is more plentiful and nearer the hills in the South it changes over to brushwood or scrub lands. This section consists of stunted trees of no great height or girth and it yields no sizeable timber. But it is the main source from which the fuel supply of the plains below is derived. Perhaps the most useful of all the trees here is Mahua which yields food, country wine, and timber to the rural people.

Chapter Two
Historical Background

CHAPTER TWO

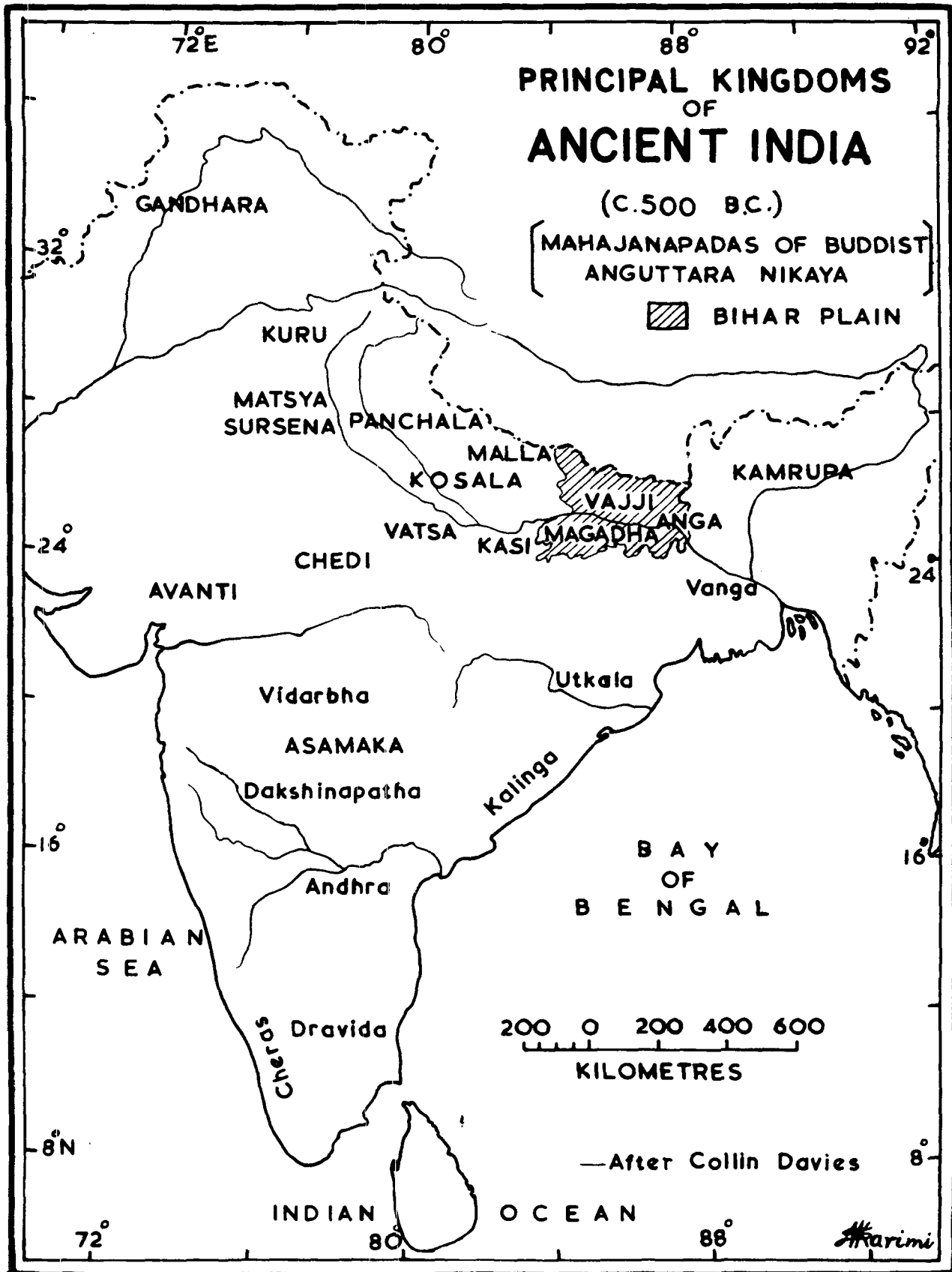
HISTORICAL BACKGROUND

From the foothills of the Himalaya to the hill girded heights of the Bihar plateau, the vast tract of Bihar Plain is dotted with old fortresses, shrines or relics so that the history and tradition of Bihar as traced out from these ruins go back to the earliest dawn of human civilization and it appears that for centuries the history of India has been actually the history of Bihar. Bihar's contribution to Indian culture too has been rich and varied. Sita, the emblem of Hindu Womanhood was born in Bihar. Buddha got his enlightenment at Bodh Gaya and three of the Buddhist Councils were held in Bihar — first at Rajagriha (Rajgir), second at Vaisali (Basarh in Muzaffarpur) and third at Pataliputra (Patna). Lord Mahavira, the founder of Jainism was born at Vaisali and died at Pawapuri near Bihar-sharif in the 5th century B.C. The ancient universities of Nalanda and Vikramashila were¹ of world importance. Out of these ancient universities of Bihar flowed mighty currents of thoughts which enriched human mind all over Asia.

In the following pages, a brief historical geography of Bihar is outlined specially with respect to its frontiers and the geo-political units which were of prominence in each period and a brief account of the socio-economic developments

1. Lal, R. B. - Glories of Bihar (Patna 1953) Pages 11-16

FIG. NO.13



that were going on within these frontiers have also been discussed side by side. This is because history bears strongly on town development.

ANCIENT BIHAR
(Pre-historic days to A.D. 11th Century)

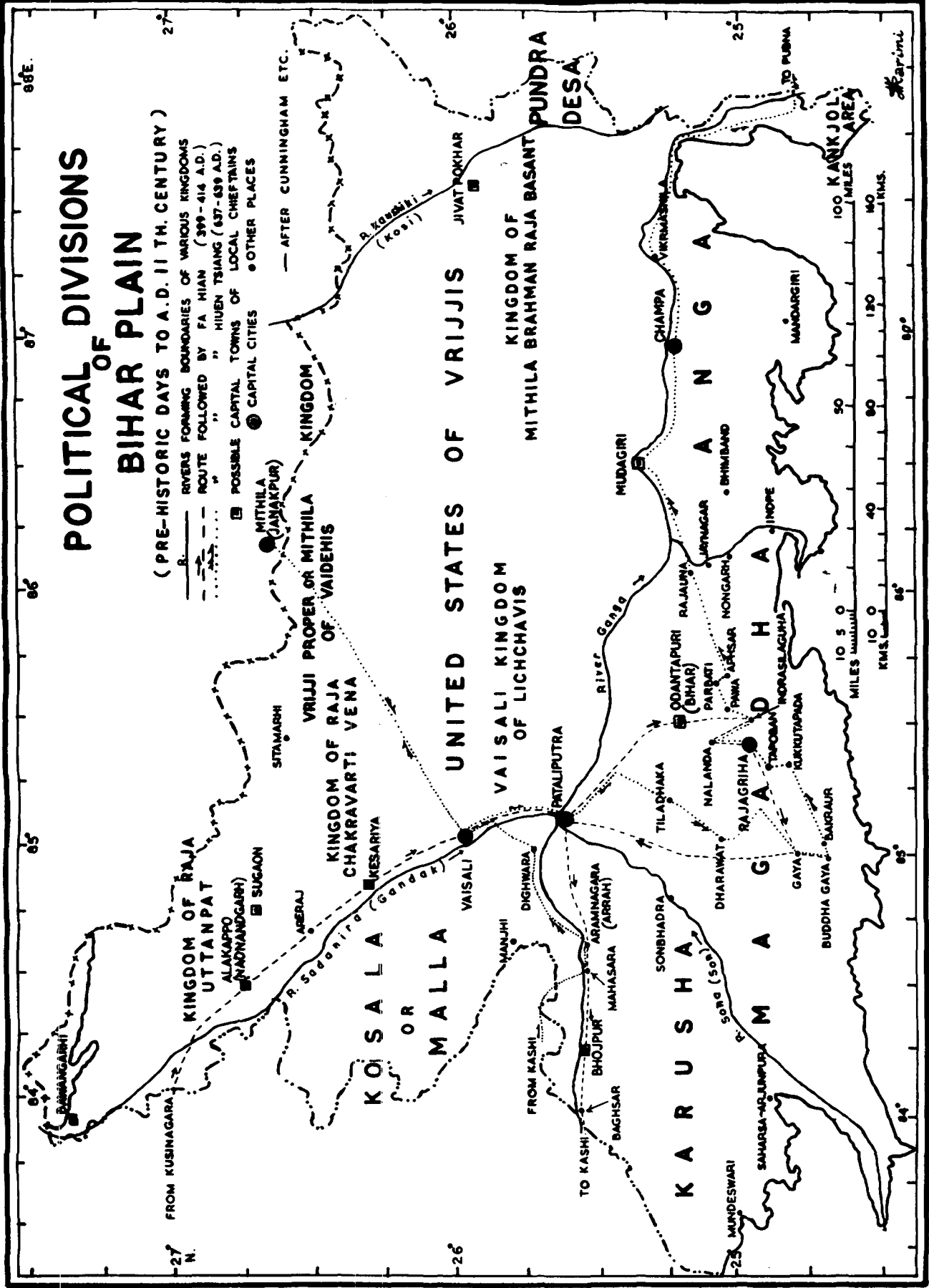
Ancient Geo-Political Units of Bihar Plain :-

Several kingdoms like the Kosala, Vaisali, Mithila (Videha), Anga (Champa), Magadha (Kikata) and Karusha etc. existed partly or wholly in this part of the country now known as Bihar Plain. In the 7th century B.C. northern India and parts of Deccan were divided into sixteen principalities, the sixteen Mahajanapadas or the Buddhist Anguttara Nikaya. (Fig.13). These sixteen great powers were (1) Anga, (2) Vajji, (3) Magadha, (4) Kasi, (5) Kosala, (6) Malla, (7) Chedi, (8) Vatsa, (9) Kuru, (10) Panchala, (11) Matsya, (12) Surasena, (13) Asmaka, (14) Avanti, (15) Gandhara, and (16) Kamrupa.² (Fig.13). The Vajji or Vrijji confederacy in the North Bihar Plain extending from Gandak in the west to Kaushiki³ in the east and from the Ganga northwards to the foothills of the Himalayas was perhaps the most important. It included eight confederate states amongst whom the Mithila of Videha or Janaka and Vaisali of Lichchavi were the strongest. Although exact boundary of the other states is not clearly defined yet some of the towns like Kesariya, Nandangarh (Lauriya), Simraon (Simra in Nepal), Sugaon (Sugauli) and Jivat Pokhar (Purnea) mark the

2. Collin Davies - Historical Atlas of Peninsular India
(Oxford, 1949) Page 6.

3. i.e., Kosi which was then flowing near present Mahananda river

FIG. NO. 14



SOURCE:- THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL & GEOGRAPHICAL ACCOUNTS.

probable sites of the capitals of other states. Magadha, Karusha and Anga were the important kingdoms in South Bihar (Fig. 14).

Mithila covered some 1300 Kms. or 800 miles (4,000 Li) in circuit stretching away from east to west between Gandak and Kausiki (Kosi) rivers in a long narrow strip and covered the northern portions of modern Champaran, Muzaffarpur and Darbhanga districts and probably in part, of Saharsa and north west Purnea. It was the most civilized kingdom north of the Ganga and its capital was Mithila or Chansura identified with Janakpur, a town in short distance to the north-west of the Darbhanga district in Nepal territory in the terai-lands (Fig.14). It is said that the royal court of Mithila of Janaka kings was famous as one of the most important centres of learning in ancient days.

The Vaisali kingdom lay to the south of Mithila and as described by the Chinese pilgrim Hiuen Tsiang in the 7th Century A.D., it covered some 1600 kilometres or 1000 miles (5,000 Li) in circuit lying east of the Gandak and extending in the east upto Kaushiki. It consisted of major portion of Muzaffarpur and Darbhanga districts and probably a part of Champaran district and was a very fertile region abounding in mangoes, plaitain and other fruits. It was inhabited by a very strong clan of the Vajji confederacy — the Lichchavi whose capital was Vaisali identified with Basarh in Muzaffarpur district along the east

4. Cunningham, A - Ancient Geog.of India, (Calcutta,1924)Page 514

5. Pandey, H.S. - Geography & Topography of Bihar, (Patna 1963) Page 90.

bank of the Gandak some 37 kilometres (23 miles) west of the modern city of Muzaffarpur city or 37 kilometres (23 miles) north of Hajipur town. (Fig. 14)

The Kosala kingdom although lying mainly in the eastern Uttar Pradesh Plain, extended eastward upto the Gandak river, so that the whole of the modern district of Saran appears to have formed a section of the eastern Kosala kingdom, which had Ganga as its southern boundary and the mountains of Nepal as its northern boundary while on the east it was separated from the territory of Mithila and Vaisali by the Gandak river. This part of Saran district which then formed the eastern section of Kosala Janapada⁶ was probably the home of Malla tribes. (Fig.14)

In between the Son river on the east, the Karamnasa river in the west and lying almost wholly to the north of the Rohtas plateau was the old Karusha⁷ state corresponding to the northern two thirds of the modern Shahabad district which is so distinct even today with respect to dialect (Bhojpuri as against Magahi or Magadhi) and inhabited mostly by Rajput of former Parmar clan.

The ancient kingdom of Magadha was to the east of Karusha (Fig.14). Starting from the eastern banks of the river Son and lying north of the forested hilly territory of the south upto the Ganga, it extended probably upto the Champa or Chandan river in the east. It thus covered the present districts

6. Pandey, M.S.- Geography & Topography of Bihar, (Patna, 1963)
Page 93.

7. J.A.S.B, (Patna 1895), page 255; J.R.A.S. (London 1914) Page 271.

of Patna and Gaya. Magadha continued to be inhabited by non-Aryan tribes at a time when Tirhut was under the sway of Aryan immigrants. The word 'Vratya' or 'Kikata' is a general epithet given to the non-Aryan people of Magadha. Magadha was thus the centre of non-Aryan Vratya or Kikata civilization and was so even as late as 6th Century B.C., though in later years this region too like north Bihar Plain became aryanised. Ramayana and Mahabharata often refer to Magadha and in one of his inscriptions, Asoka uses this name and refers himself as the King of Magadha. The Ganga in the north was a natural boundary which separated it from the Vaisali state of the strong Lichchavis across the river, but the eastern and western as well as the southern boundaries do not appear to be quite clear. River Champa (probably Chandan river) was the boundary between Magadha and Anga as pointed out in Jataka, so that a fair portion of Bhagalpur district formed a part of Magadha. But at the same time as mentioned in Mahabharata or even identified by the Chinese traveller Hiuen Tsiang, a small independent state of Mudagiri of a local chieftain existed in the north eastern section of Magadha corresponding to the present district of Monghyr lying to the south of the Ganga and this was attached either to Anga or
8
Magadha. Its capital was probably Monghyr. Along the west too

8. Describing about this kingdom Hiuen Tsiang writes :-

"The country is regularly cultivated and rich in produce; flowers and fruits being abundant; the climate is agreeable; and the manner of the people are simple and honest. The capital Hiranya Pravata (probably Monghyr town) lay on the southern bank of the Ganga and close to it stood Mount Hiranya (probably Kharagpur hills with hot springs) which belched forth masses of smoke and vapour that obscured the light of the Sun and Moon."

the river Son probably formed the western limit in the days of Buddha or it probably extended upto the Karamnasa river (the present⁹ boundary of the State of Bihar) as Cunningham suggests or perhaps extended even as far as Chunar in Mirzapur district of U.P. or¹⁰ upto Banaras as N.L.Dey thinks. So is the case with the southern boundary. Cunningham takes the Damodar river as its southern limit, but N.L.Dey includes the whole of Jharkhand area of Chotanagpur, so that the whole of Ranchi and Singhbhum area is ~~included~~. But forested as these areas were then, they were only loosely included in Magadha. Magadha as a state by itself probably extended in the south to include only the northern part of Hazaribagh district.

However the modern district of Patna and Gaya without any doubt formed the heart of the famous State of Magadha which was bounded in the north by the Ganga and in the south by the northern outliers of Chotanagpur hills, in the east by the Champa river and in the west by the river Son.

The earliest capital of Magadha, specially at the time of Mahabharata War was Rajagriha (identified as Rajgir) but was later on shifted to the ancient city of Pataliputra (identified with Kumhrar, Patna) which remained the hoary capital of Nandas, Chandra Gupta Maurya and of the Great Buddhist Emperor Asoka. Magadha was indeed the earliest historic metropolis of the first great Indian Empire.

9. Cunningham bases his argument on the basis of distances given by Hiuen Tsiang.

10. Dey, N.L.- Geographical dictionary of Ancient & Medieval India (London 1927).

The monarchical State of Anga situated east of Magadha was separated by the river Champa. It included portions of Monghyr Bhagalpur, parts of Santhal Parganas and southern portions of Saharsa and Purnea districts in North Bihar. It extended in the east to river Mahananda, beyond which the present portion of Purnea district lying in Bihar Plain once formed part of the kingdom of Pundra Vardhana that actually extended in the east to river Karateya (Brahmaputra) and in the south to Padma river. Within the Anga itself there appears to be sub-sections which were at times ruled by independent chiefs. Anga was probably known as the kingdom of Champa. According to Hsuen Tsiang its northern boundary extended along the Ganga from the Kharagpur Hills near Monghyr in the west to Rajmahal Hills in the east; while the southern boundary passed through dissected spurs of the Bihar Plateau where wild elephants and savage beasts roamed in herds. This kingdom of Champa proper was then ruled by King Karna whose capital Champa has been identified as modern Champagnagar near the western suburb of Bhagalpur city. It was then considered to be one of the six great cities of India and was noted for its wealth and commerce. Portions of Anga lying north of the Ganga specially corresponding to the modern Saharsa and southern Purnea districts were occupied by Mahanjan King of Kaushiki Kachcha probably known as Angatharapa ("the waters to the north of Anga") to Buddhist scholars. It formed a part of Angadesa. A large part of it remained submerged under water for the

greater part of the year. This is probably the land which is referred to as Jalodbhava 'reclaimed from the swamp' in the ¹¹ Mahabharata. It was probably in the Anga again that the south-eastern portion of the district of Monghyr formed a small kingdom of Mudagiri about which mention has already been made while discussing Magadha.

Historical developments during the Hindu Period -

Out of the large number of States into which Bihar was divided, the Lichchavis with their headquarters at Vaisali (Basarh) in Muzaffarpur district, the Videhas or Janakas with Mithila (Janakpur) in Nepal as their capital, the Vratya or Kikata of Magadha with their capital at Girivraja (Rajgir) and the Champa kingdom with their stronghold at Champa along the Ganga in the east were amongst the most important.

In North Bihar the kingdom of Vaisali was replaced by a republican Government in 700 B.C. and at about the same time the Videha or Mithila monarchy was also replaced or rather merged with it, and the seat of the Mithila shifted from Janakpur to Vaisali in the Muzaffarpur district. In South Bihar political consolidation was taking place rapidly from 500 B.C. and soon the whole of the tracts of eastern Bihar Plain were amalgamated in the great Magadhan Empire by Bimbisara. Later Bimbisara's son Ajatsatru, conquered the country now known as Tirhut in which the Lichchavi clan occupied a prominent position (C.490 B.C.)

11. Pandey, M.S.- Historical Geog. of Bihar (Patna, 1963), Page 97.

The invasion was successful, the Lichchavi's capital, Vaisali was occupied and Ajatsatru became master of Tirhut. In this way the whole of the north Bihar Plain including the Nepalian Terai lands¹² became subjected more or less directly to the suzerainty of Magadha.

Thus in course of time due to the annexation of Anga, Vaisali, Kosala and even in later years of Karusha, the Magadhan kingdom gradually became an important Imperial Empire in the whole of northern India. This rise of Magadha and the overthrow of the Lichchavi Republic in 475 B.C. led to the shifting of its capital to Pataliputra (Foundation stone for the city was laid in 487 B.C. the year when Buddha died) which was more centrally situated than Rajagriha. As it commanded the river traffic of the Ganga, the Gandak, the Son, the Punpun and the Saryu (Gogra or Ghaghara) it soon became a famous trade emporium.

Mauriyan period is regarded as a period of great activity and indeed the age of Asoka was a glorious epoch in the history of Bihar. During the reign of Chandra Gupta Mauriya, Pataliputra became the capital of a mighty empire that extended from the Bay of Bengal to the Arabian Sea. In 303 B.C. Seleucus sent Megasthenes as his envoy to the court of Chandra Gupta at Pataliputra; and again in 250 B.C. Ashoka himself convened the great Buddhist Council (third in order) at Pataliputra. The Kushans also ruled over Bihar for A.D. 70 to 150, but the geopolitical developments in the then Bihar is little known. During the third century the Lichchavis of Vaisali reasserted

12. O'malley, L.S.S. - Bengal District Gazetteer, 'Darbhanga' (Calcutta, 1907), page 13.

their position and reestablished themselves as a strong power at Vaisali, which was however occupied by the Great Guptas only after a matrimonial alliance with the Lichohavis.

The first king of the Gupta period was Maharajdhiraj Chandra Gupta (320-335 A.D.) who was one of the greatest warrior kings of India. It was he, who gave permission to Megha Verma, King of Ceylon to build a monastery in Bodh Gaya for the Ceylonese Pilgrims. Gupta period was the Golden Age for Bihar. Fa-Hien, the Chinese traveller visited Bihar during Chandra Gupta, known also as Vikramaditya (375-412 A.D.); Budha Gupta made a Sangharama at Ealanda; Purna Varman (630-632 A.D.); brought Bodhi tree back to life and erected a stone railing 10 feet high and lately Harsha constructed bronze covered Vihara in Nalanda.

From 500 to 700 A.D. the historical geography appears to be in the dark. It was, however, during this period that Pataliputra suffered terribly by a sudden and devastating flood of the Son, which till then joined the Ganga just near the city. The city had very few inhabitants at the time of the visit of Hiuen-Tsiang in A.D. 637. Although due to its commercial importance, the city regained some of its glory, it never regained original importance.

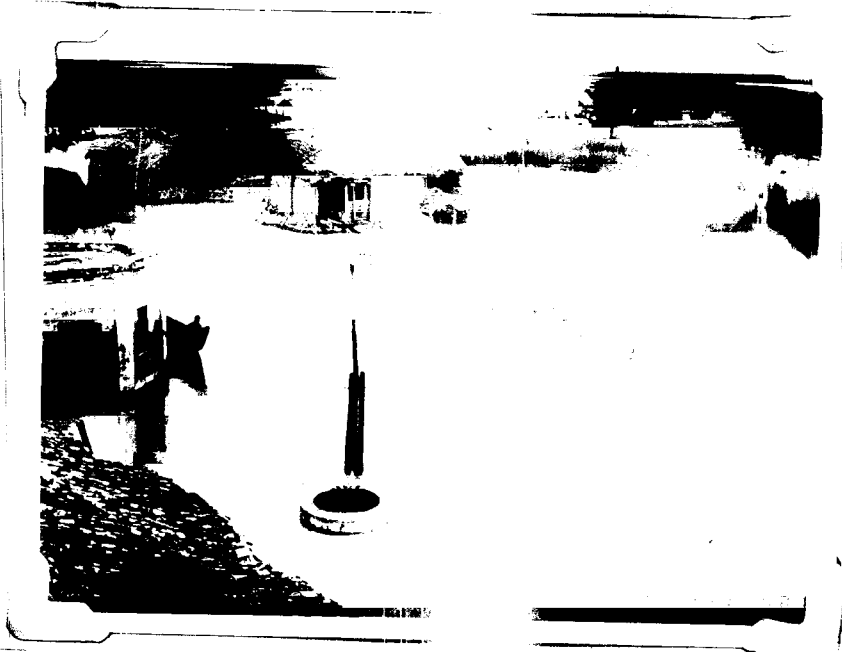
During the reign of Pala kings there were slight re-arrangements as regards the various 'bhuktis' into which Bihar was then divided, but the historical geography of the period between 750 to 1200 A.D. is still vague and in the absence of reliable and continuous data, it is difficult to outline any definite picture.



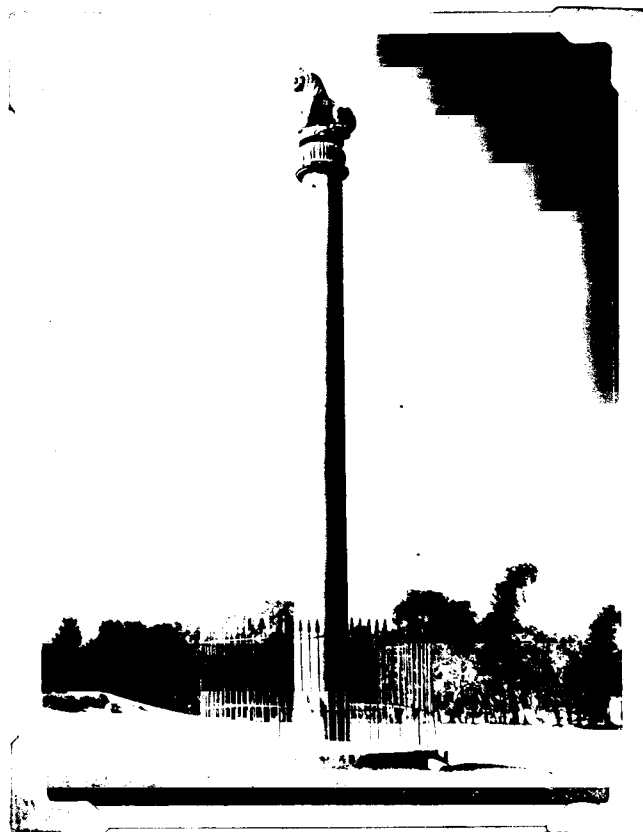
No. 1
Nirmali town in the grip of the Kosi's
(the sorrow of Bihar) overflowed water.



No. 2
Asoka's highly polished sand-stone edict
pillar, Louriya Nandangarh (Dist. Champaran)



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No. 2
Asoka's highly polished sand-stone edict
pillar, Louriya Nandangarh (Dist. Champaran)

General economic conditions :

The Bihar Plain during ancient days enjoyed peace and general prosperity except for the later period when the region was disturbed due to the raids by Huns and Jats. It was rich agricultural land with localized industrial activities in spinning and weaving here and there. Wood carving and stone sculpturing were also important. The textile industry was highly developed during the Guptas. The Buddha Copper Image of Sultan-ganj and the brass and bronze shrines at Nalanda are testimony of the skill of gold-smith and copper-smiths etc. in those days. Commercial activities as the Chinese travellers like Fa-Hian (in 5th century A.D.) and Hiuen Tsiang and I.Tsiang in 7th century have noted, were significant. Most of the trade was internal but Kasi silks and brocades were imported for the use of the courts etc. The principal cities like Rajagriha, Pataliputra, Vaisali, Champa and Gaya were connected with one another by unmetalled but busy roads. These roads (Fig.14) were usually marked by stone pillars such as Asoka's rock-edict pillars that are still standing on the old Vaisali-Kathmandu road. A good description of these roads and other caravan routes are available in the travel accounts of the Chinese travellers.

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13. Chandra, J - 'Textile Industry in Ancient India'-J.B.O.R.S. (Patna 1917), Page 180-245.
14. Divakar, R.R.- 'Bihar through the Ages'- (Calcutta, 1959) Page.180.
15. Carlleyle, A.C.L.- Tours in Gorakhpur, Saran and Ghazipur A.S.I. Report 1877-80 Vol.22(Calcutta 1885) page 55.
16. Beghar, J.D.- Report of a tour through the Bengal Province A.S.I. Report 1872-73 (Calcutta 1878) Page 48-51.

The Rajagriha - Pataliputra road passing through Dharawat (Barabar Hills), Tiladhaka (Telhara), etc. was most significant. This royal highway extended across the Ganga in the north to Vaisali and even beyond to Kesariya and Nandangarh in Champaran district from where roads radiated to Kusinagara in Uttar Pradesh in the west, to Kathmandu in Nepal in the north and to Mithila (Janakpur now in Nepal) in the east. Vaisali was also an important nodal point with respect to the unbridged Katcha roads of the age. From here roads, besides the Nepal-Pataliputra highway proceeded to Kasi in the west, Mithila in the north east and Champa towards the south-east. Following the south Ganga bank, an important road linked Kosambi (near Allahabad) and Pataliputra (Patna) via Mahasara (Masar) and Baghsar (Buxar) ¹⁷ ¹⁸ Hiuen Tsiang in the 7th century A.D. is said to have followed this route while leaving Pataliputra for Kasi. Another important road was the Rajagriha-Champa route which linked Inrasila Guha (Giriak), Pawa, Mudagiri and Champa (Champanagar western suburb of Bhagalpur) and following the narrow Ganga riparian passage in Santhal Parganas lead to Kankjol town (somewhere near Pakaur town) in the extreme east. (Fig.14).

The Ganga, the Sona (Son) the Earna (Gandak) and the Kausiki (Kosi) probably offered other means of transport.

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17. Cunningham, A- Ancient Geography of India - Edited by
Rajumdar Shastri (Calcutta 1924), page 511.
18. Carlleyle, A.C.L.- Tours in Gorakhpur, Saran and Ghazipur
A.S.I. Report 1877-80, (Calcutta 1885)
page 55.

Pataliputra (Patna), Mudagiri (Monghyr) and Champa (Bhagalpur) were essentially the principal river ports along the southern bank of the Ganga from where boats sailed via Samtalipti port in Bengal to Ceylon and South East Asia. The cities and principal towns as far as can be assessed, had all pleasure gardens and tanks surrounding the forts or the palaces and the suburban sections¹⁹ probably extended far beyond the city gates.

19. Carlleyle, A.C.L. - Towns in Gorakhpur, Saran and Ghazipur,
A.S.I. Report 1877-80 (Calcutta 1885)
Page 181.

MEDIEVAL BIHAR

(Turks, Afghan & Moghal period - 12th Century A.D. to Mid 18th century)

Re-organisation of the region into 'Iqtas' (Subahs) and their sub-divisions into other political units :-

Before the advent of the Muslim rule, Bihar appears to be divided into distinct provinces. North of the Ganga, the Kosi was the boundary between Tirhut and Bengal. Part of Purnea lying east of the Kosi river was included in the kingdom of Lakhnauti in Bengal. The section north of the Ganga from the Gandak to forests of Champaran and from Champaran eastward upto the Kosi in Purnea formed the province of 'TIRHUT' and covered the modern districts of Muzaffarpur, Darbhanga, Champaran, parts of Bhagalpur and Monghyr north of the Ganga and Purnea west of the old bed of the Kosi. This region of the north called 'Videha or Tirabhukti or Tirhut' was under the powerful Karnataka dynasty of Mithila (Janakpur), Simraon (now in Nepal, north of Raxaul) and Sugaon (Sugauli); and these Karnataka rulers managed to continue their hold. Time and again they were defeated before the Moghal rule but were, as a matter of fact, never thoroughly subjugated.

The southern Bihar Plain, the Magadha and Anga of ancient Bihar, is now called 'Bihar Proper'. It consisted of modern districts of Patna, Gaya, Shahabad and parts of Monghyr and Bhagalpur. According to Buchanan it extended during the

20. The early Muslim conquerors were really so struck by the large number of Viharas (Monasteries) they saw, specially in the vicinity of Odantapuri, that they called the region 'Vihar (Bihar)' and since then the city of Odantapuri was called 'Bihar'.
Imperial Gazetteer, Vol. 7, (Oxford 1908) Page 212.

Afghans upto Teliaghati pass where the Rajmahal hills almost touched the Ganga and separated Bihar from the Subah of Bengal. The south western section of South Bihar Plain, however, according to some specially from Garnadra (Chunar) to eastward upto Gridhrakuta (Vulture's Peak) near Rajgir, including parts of Shahabad and modern Gaya district, formed 'Kekata,' which was supposed to be an important western part of Bihar.

The southern hilly districts of Ramgarh, Chotanagpur and Palamau i.e. from Panchet and Birbhum (West Bengal) in the east to Ratanpur (Madhya Pradesh) and from Rohtas to the frontiers of Orissa were collectively called Jharkhand or Jungle-land. Abul Fazl called Chotanagpur by its old name of Kokrah, which is still the name of one of its parganas. This part of Kokrah or Jharkhand of the south was ruled then by the chiefs of various aboriginal tribes, the Cheros being predominant in Palamau, the Mundas in Ranchi and the Bhuiyas and Gonds in the Orissa State. The Son then joined the Ganga near Maner while the Punpun flowing from south joined the Ganga near Patna.

The region was agriculturally prosperous. The cultivation of rice was an speciality of the area. 'Its quantity and quality' writes Abul Fazl, was rarely to be equalled.

21. Abul Fazl - Ain-i-Akbari, Vol. 2 translated by H.S. Jerrett, (Calcutta 1891), Page 151.

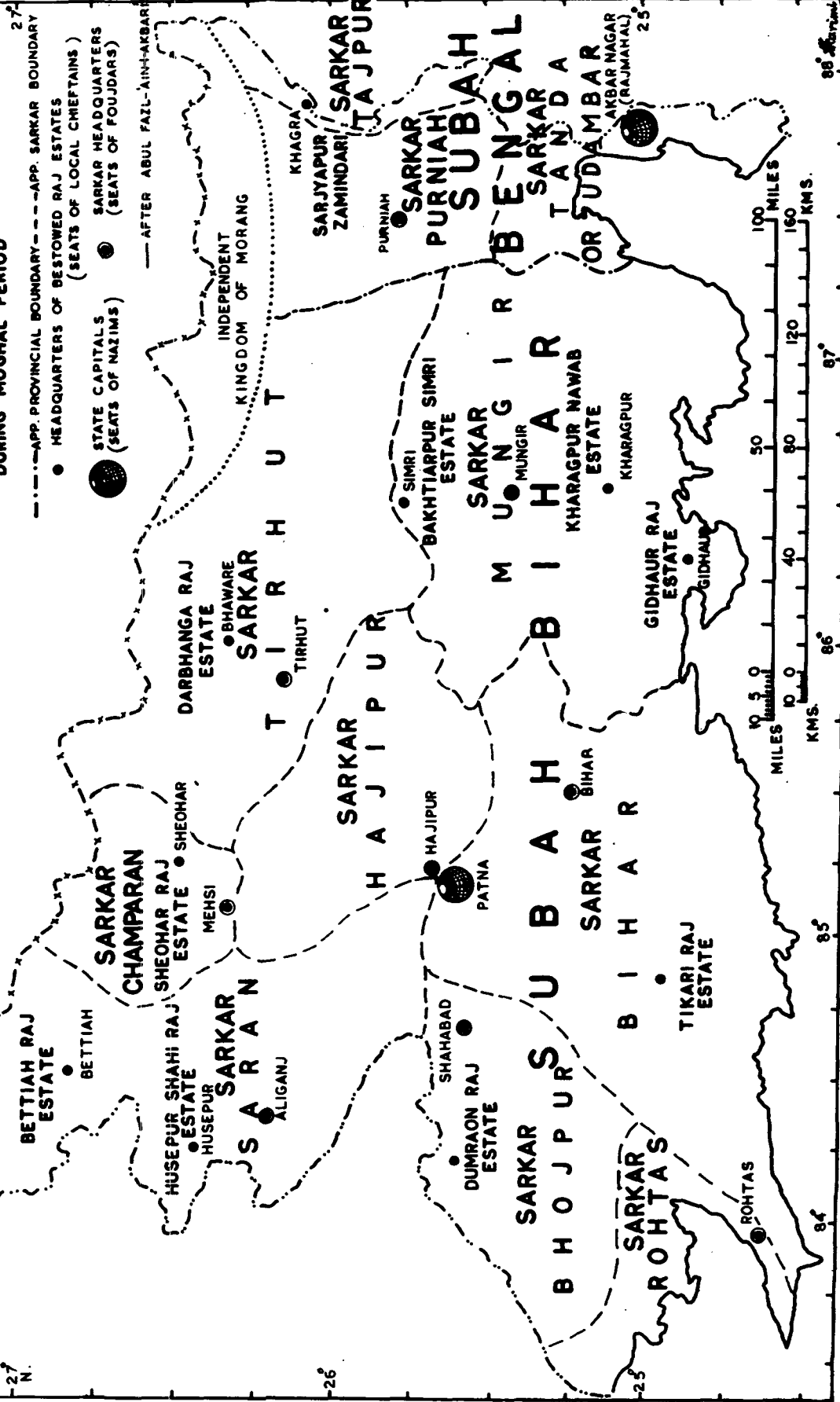
22. Ibid, Pages 151-152.

During the days of the Moghals (Beginning from A.D.1526) Bihar was however, for the first time organised into a separate ²³ subah or province. The central administration of the Moghals was primarily concerned with the collection of revenues and the maintenance of a strong and efficient army to guard its frontiers. As a result of this the whole of the Empire was divided into broad military commands each under the control of a leading Amir called Nazim or Sipah Salaar equivalent to Governor. Each division prior to Akbar was known as Iqtas (equivalent to Subah) were the main units, while in Akbar's time, a subah was divided into minor divisions known as Sarkars and each Sarkar was subdivided into Dasturs (districts) and each Dastur was divided into Parganas (political units) or Mahals (revenue or fiscal units). The subah as a whole, however, was administered by the ²⁴ Nazim, the Divan and the Sadr, while the Sarkars were under the charge of sub-ordinate officers like Foudar (the executive and military head) Amil (chief revenue officer) and Qazi (the judicial head). Shiqdar was the executive head of a Pargana and was incharge of the police as well as criminal justice and was assisted by the thanadars and Muftis. Kotwal was, however, the chief of the city police and incharge of the entire town administration. He was rather an 'Urban Officer'. (Appendix 9).

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23. The name of Subah originated from the time of Emperor Akbar who designated the broad fiscal areas into which India was divided from the time of ten-years' settlement.- Salim, G.H.- 'Riaz-us-Salateen' translated by A.Salam, (Calcutta, 1902) Page 7.
24. Salim, G.H.- 'Riaz-us-Salateen' (Persian) translated by Abdus Salam, (Calcutta 1902) Page 6;
Abul Fazl - Ain-i-Akbari, Jerrett's translation, Vol. II (Calcutta 1873) pages 37-49.

FIG. NO.15

ADMINISTRATIVE UNITS OF BIHAR PLAIN DURING MOGHAL PERIOD



On the basis of Abul Fazl's account of Akbar's Empire, it appears that the Bihar Plain formed, in the main, the Subah-i-Bihar while eastern half of present Purnea and the Ganga riparian tract eastward from Mirza Chauki formed part of Subah-i-Bengal (Fig.15). The boundary between Bengal and Bihar in the northern plain was marked by river Kosi which then was flowing past Purnea and Katihar towns. ²⁵ The headquarters for the Nizamat of Bihar was Patna while the seat of the Bengal Sipah Salaar (Governor or Nazim) was also located in the Bihar Plain. It was the present Rajmahal town which was then styled 'Akbar-nagar' in the official papers. The details of the Sarkars falling within the Bihar Plain are, however, outlined in Appendix 8. Within the Sarkars in each Subah some Jagir lands were bestowed to the local chieftains for being sympathetic to the Imperial throne. Sometime for their extra-ordinary performances and sincerity, vast territories as 'Estates' (Fig.15) were offered to them, which were directly controlled by the local Rajas. Some of the important Estates that appear to have had emerged in Bihar Plain during the Moghals are shown in Appendix 10 (Fig.15).

²⁶

Political Developments during the Moghal period -

At a time when the Muslims were advancing to the east, the Tirhut region or North Bihar was under the Karnataka dynasty

25. Salim, G.H.- Riaz-us-Salateen translated by A. Salam, (Calcutta, 1902) page 37.

26. The account given here is based primarily on (1) Minhaj Seraj's Tabaqat-i-Nasri etc. translation of which is available in Elliot's History of India as told by its own historians Vol.8 (London 1867).

(2) Salim, G.H.- Riaz-us-Salateen translated by A. Salam (Calcutta 1902) & (3) Khan, Ghulam Hussain- Seir-i-Mutagherin translated by Haji Mustafa, Vol.1-4 (Calcutta, 1879).

of Mithila, while Pala kingdom lay to the south in South Bihar. The foundation of the Muslim rule in Bihar was laid by Ikhtiaruddin Mohammad Ibn Bakhtiar, a Turk of Ghur and who acknowledged the suzerainty of Mohd. Ghori. Selecting his base in the fields between the Ganga and Karmnasa, he made repeated incursions into Maner and then into the interior of the riparian tracts of the Ganga Plain. He captured the fortified city of Bihar sharif then known as Odantapuri and subjugated the neighbouring areas, and set up a fortress on the site of Odantapuri. According to the accounts of Mulla Taqia of the 16th Century, Ikhtiaruddin Mohd. Ibn Bakhtiar invaded Tirhut (Mithila) and made its Karnataka ruler a tributary.²⁷ He also marched through the difficult Jharkhand area and captured Nadia in West Bengal.

Determined to detach Bihar from Bengal, Sultan Iltutmish conquered Bengal and constituted Bihar including Tirhut as a separate province (1230-31) with Malik Allauddin Jani, Malik Saifuddin Aibek and Tughril Tughran as successive governors. Bihar, however, soon lost its separate status. During 1234-1320 it was not under the effective hold of the Khiljis but owed allegiance to Bengal. But the region figured prominently again in the eastern campaign of Tughlaqs. Gheyasuddin Tughlaq, founder of the dynasty, set out eastward in 1324 through Bihar and on his return captured Tirhut and demolished the stronghold of the Karnataka dynasty. Later in 1340, Mithila was given over to Kameshwara Thakur, the founder of the Oniwar dynasty. Tirhut

27. Divakar, R.R. - Bihar through the Ages - (Calcutta, 1958)
Page 383.

was formed into some sort of an administrative unit with Tughlaqpur (Darbhanga) as the seat of a Foujdar. Mohd. bin Tughlaq even issued coins from the mint at Tughlaqpur alias Tirhut. But although South Bihar later on remained in the undisputed possession of the Delhi Sultans, North Bihar went under the possession of Haji Shamsuddin Ilyas of Bengal who in the hay-day of his power had ruled over the whole of North Bihar (1345). Ilyas extended his dominion upto Champaran in the west. He divided Tirhut into two parts with Gandak as the dividing line. later, Firoz Tughlaq defeated Ilyas and drove him away from Tirhut. The two parts were united once again and given in vassalage to Bhogeshwar Thakur, the son of Kameshwara.

From 1397 to 1480, Bihar was much controlled by the Sharqi rulers of Jaunpur who extended their eastern frontiers into south Bihar and Tirhut. But specially towards the end of the 15th Century and in the early 16th the period witnessed the tripartite struggle for mastery over Bihar between the Lodis, (Delhi Sultanate) Sharqis (rulers of Jaunpur) and the Ilyas Shahi king of Bengal. Although Hussain Shah (Sharqi ruler) retained control of Patna and the Trans-Gangetic area and North Bihar, part of Bhagalpur in North Bihar and Tirhut was controlled by Nasiruddin Mahmud and his son Ruknuddin Barbak Shah (1459-74) of Bengal. The territory of Tirhut was divided into two divisions, one of which was directly under Bengal while the other, north of the Gandak was left in charge of Raja Dhir Singh.

Towards the end the history of Bihar is connected with the complicated phase of the Sharqi-Lodi struggle.

The reign of the first two Moghal sovereigns, Bahar and Humayun witnessed the fluctuating struggle between the new rivals for mastery over India and the previous ruling Afghan²⁸ dynasties. After Babar had over-thrown the Afghan dynasty at Delhi he turned his arms against the independent rulers of Bihar. They²⁹ were defeated twice by Babar in 1528 and 1529, along with the kings of Bengal in Battles on the bank of Gogra. Although Humayun too, after the death of Babar crushed the rising Afghans³⁰ of Bihar in 1531 near Lucknow, he was not virtually able to crush³¹ Sher Shah a descendant of the royal house of the Suri kings of Ghor, who rose from a humble executive chief to the rank of prime minister of the Afghan governors. Indeed Sher Shah after defeating Humayun in 1537-38 at Buxar, proclaimed himself as the king of Bihar and Bengal and a year later after defeating Humayun against Qanauj became the Emperor of India. The attempt at reviving Afghan supremacy thus included the brilliant but short-lived illustrious career of Sher Shah and his immediate successor. During the reign of Sher Shah, Bihar enjoyed peace and prosperity and the people were secure from oppression and

28. Divakar, R.R.- Bihar through the Ages - (Calcutta '58) Page 473.

29. Imperial Gazetteer of India, Vol.7 (Oxford 1908) page 473

30. Ibid, page 213.

31. He entered the service of Bahar Khan, the independent ruler of Bihar. After the death of Bahar Khan, Sher Shah became guardian of the minor son of Bahar Khan namely Jalal Khan. Subsequently Sher made himself the virtual dictator of Bihar.

bribery. Sher Shah added some outlying areas such as Chunar while his annexation of Monghyr from Murshidabad of Bengal extended the eastern boundaries to the Rajmahal hills. It was again during Sher Shah's time that north and south Bihar which were upto-now frequently held under two different and hostile powers, were united and brought under a common centralised political control.

The hold of the Surs was ultimately thrown off, ten years after the death of Sher Shah, when Humayun, recovered the throne of Delhi and Emperor Akbar himself inflicted a crushing defeat on the Afghans at Hajipur in 1574.

The reign of the three successors of Akbar (Jahangir Shah Jahan and Aurangzeb) were comparatively peaceful and prosperous for Bihar. Further consolidation of the Moghal hold on some of the inaccessible parts of the province such as Chotanagpur took place. But after the death of Aurangzeb in 1707, the peace and prosperity of Bihar was again disturbed. Separatist tendencies once again raised their heads and towards the middle of the 18th Century, Bihar was once again tagged on to Bengal as before. But the confused conditions of the later Nawabs in Bengal and ignorance of Delhi Emperors inspired the British trading company to take leading part in politics. Mir Jafar and other enemies of Serajuddaula had formed a conspiracy against him with the English and drove the Nawab to the battle of Plassey on 23rd June, 1757. On the death of Serajuddaula who was captured at Rajmahal while he was going upstream in the Ganga in the hope to meet his French Allies. Sadik Ali Khan alias Miran was nominally appointed as the

Governor of Bihar with Raja Ram Narain as his deputy. Clive by that time could manage to secure a very important commercial advantage for the English company by persuading the friendly Nawab, Mir Jaffar of Bengal to grant them the monopoly of the saltpetre trade in Bihar.

The 1759-61 saw the invasion of Bihar by Shahzada Ali Gauhar (who had proclaimed himself Emperor under the title of Shah Alam II) and later Mir Qasim, son-in-law of Mir Jaffar, after the death of Miran³² was made Nawab of Bengal (October 1760). He wanted to be a real ruler, not a mere figure head, with the power of the British supporting his throne. He organised his army on modern lines and arranged the manufacture of flint muskets and guns at Monghyr which was then a very important centre for such works. He shifted the headquarters of his government from Murshidabad to Monghyr probably because of its strategic position on the main line of communication between Bengal and Bihar. He strengthened the fortification of that city and improved it otherwise too. But the English were victorious in a battle with Mir Qasim at Udaunala (near Rajmahal) on 5th September 1763. Mir Qasim at that time was at Champanagar near Bhagalpur; he thus retreated back to Monghyr and then to Patna. The English on the other hand, flushed with their victory at Udaunala, under Major Adhams and accompanied by Mir Jaffar

32. Miran (Sadiq Ali Khan) was killed by lightning which struck his camp near Bettiah (22nd July 1760). His dead body was taken to Patna and thence to Rajmahal where it was buried at Sharifa-bazar in a spot which now goes by the name of his monument 'Take warning, He that have eyes & ears' - Khan, G.H., - 'Seir-i-Mutagherin' translated by H aji Muztafa (Cal. 1879) Page 373; Salim, G.H., - 'Riaz-us-Salateen' translated by A. Salam, (Cal. 1902), page 382.

captured Monghyr (October 1, 1763) and reached Patna on 6th November, 1763. Mir Qasim due to the treachery of his own men had to leave Bihar for Oudh. He met the English army at Buxar on 23rd October 1764. In this way the two battles ultimately at the two ends of the province — one at Uda Nala, 6 miles to the south of Rajmahal along the Bengal border on 5th September 1763 between Qasim Ali and Major Adhams where Qasim Ali had to retreat and the other along its western border near Buxar on 23rd October 1764 where Major Munro defeated the allied forces of Qasim Ali, Shujaudaula Nawab of Oudh and Delhi Emperor Shah Alam II — completely uprooted the Muslim hold in the area. Indeed the grant of Diwani of Bihar to Britishers by Shah Alam on 18th August, 1765 saw the beginning of British rule in Bihar (Fig.17).

Economic Condition and other
Developments during Muslims :

Agriculture continued to remain as the main stay of the economy of Bihar during Medieval age. Sugar cane, rice, cotton, etc. were extensively cultivated throughout. Among fruits mention can be made of banana which was grown every where in North Bihar. Sarkar Hajipur was noted for jack fruits, grapes and oranges. 'Tut' (a sort of malburry) was extensively grown in Rajmahal area — Patna was noted for mangoes and melon. John Marshall who visited the region in 1669-70 during the reign of Aurangzeb also speaks of grapes which grew in Hajipur in abundance.

33. Abul Fazl - Ain-i-Akbari, Vol.2, translated by H.S. Jorrott (Calcutta 1891), pages 150-152.

34. Askari, S.H. - Bihar in the time of Aurangzeb, J.B.R.S. - (Patna 1946) page 65.

Abul Fazl mentions of the vast stretches of land from Patna to Naubatpur which was devoted for the cultivation of cotton. Indeed cotton textile and silk weaving, on cottage basis were of great significance during Moghals. Patna, Bihar sharif and Bhagalpur were specially noted. Barh was an important centre for the manufacture of Chemeli oil while at Arwal, Sahar and Bihar-sharif considerable amount of hand made paper was manufactured. Dharamswami mentions that boat making along the ghats in the Ganga was an usual practice and the boats were sometimes as big as to
35
accomodate 500 passengers.

Patna and Biharsharif were important commercial centres and trade with Bengal on the east and Allahabad province on the west was significant; while considerable trade with Nepal was also carried on. Horses for cavalry arm constituted a principal article of import from Nepal, Sikkim and Bhutan areas. A number of grain marts such as at Barh, Sultanganj, Bhagalpur, Kohilgaon(Colgong) and Gandahgola (Karagola in Purnea) were located along the Ganga. 'Gandahgola on the bank of the Ganga' writes the author of Riaz-us-Salateen 'was a resort of traders and mahajans from
36
various places.'

A number of roads during the Moghals were improved for military purposes and bridges were also constructed at important localities on most of them. A few bridges of boats were also available across the Ganga such as at Baner, Monghyr etc. Ghulam

35. Divakar, R.R.- Bihar through the Ages, (Calcutta 1958) page 463

36. Salim, G. H. - Riaz-us-Salateen translated by A.Salam (Calcutta, 1902), page 38.

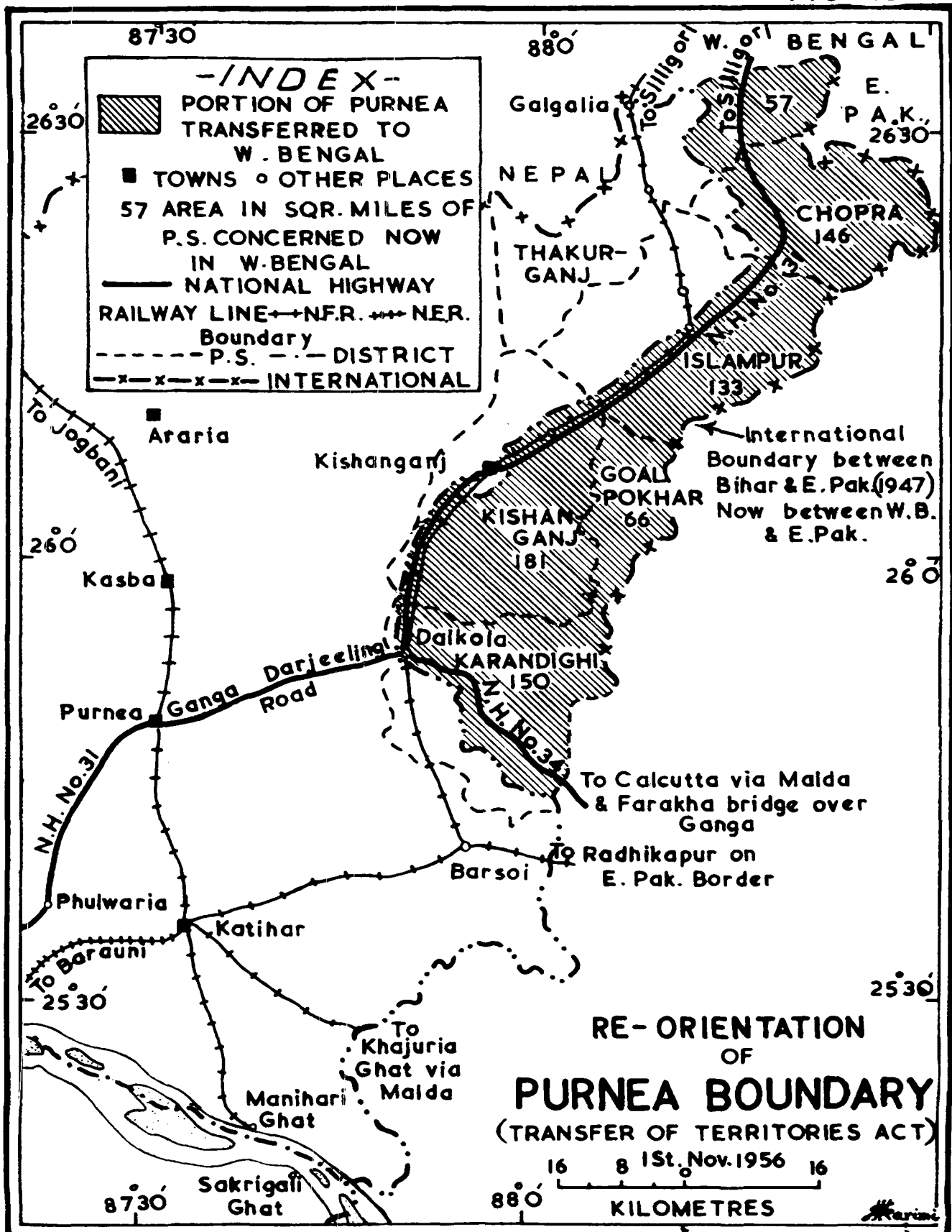
Hussain Salim informs us that the whole length of the present G.T. Road from Calcutta to Rohtas in the Peshawar valley was constructed in about four month's time at the orders of Sher Shah and special arrangements such as sarais etc. were also provided along the road at regular interval.

Urban settlements which were limited and confined to only a few cities in the past were now wide spread. Patna, Darbhanga, Purnea, Bihar, Phulwari, Shahsaram, Shehr-i-ghati (a town along the ghāt) Akbarnagar(Rajmahal) etc. were notable urban centres with a host of others scattered throughout the region. Indeed Patna which was later on called Azimabad (after Prince Azim-us-Shan) was the greatest political, commercial as well as cultural centre of the entire Bihar Plain throughout the Moghal period. Thomas Bowary (1669) did not probably exaggerate the commercial importance of Patna when he observed, "This is a country of very great traffic and commerce, and is really the great gate that openeth into Bengala and Orissa".³⁷ Abdul Latif (of Ahmedabad) who visited Bihar Plain in 1608 during Emperor Jahangir also gives a vivid picture of the city of Patna. He thus states 'Patna is a sweet city and honoured place. By virtue of its air, it is a place of perpetual spring. All kind of articles for men for food and clothing are twice or thrice as cheap and abundant here as in other places.' 'In no other city of India', Latif further goes on to say, 'can be seen so many men of Iraq and Khurasan, as has taken up their residence here.'³⁸

37. Sarkar, Jagdish Narain- 'Patna & its environs in the 17th Century' J.B.R.S. (Patna 1948), page 144.

38. Sarkar, Jadu Nandan - Travels in the East in 1908 A.D. J.B.O.R.S. (Patna, 1919) page 599.

FIG. NO.16



SOURCE :- DIST. MAP OF PURNEA GOVT. PRESS
GULZARBAGH, PATNA.

MODERN BIHAR
(Mid 18th Century up-to-date)

Territorial Re-orientation and emergence
of modern districts -

The grant of Divani was followed by certain administrative changes in the province. Specially in 1770 the administration of Bihar saw a change in the form of the appointment of the Revenue Council of Patna. In 1787 Thomas Lawes was appointed Collector of the district of Bihar (Patna-Gaya) with his headquarters at Gaya. The criminal headquarter of Bihar which had still continued in the hands of the Naib Nazim of Bengal, was taken over by the company in 1793. The jurisdiction of the first Magistrate of Patna was not beyond the city and Bankipur police circle, but in 1798, it was extended to cover an area of about 400 square miles from Patna to Maner in the west and to Naubatpur in the south. During 1793-1912, a number of changes in the sarkars and district boundaries were made. These districts together with the backward tracts of Santhal Parganas continued to form part of Bengal Presidency until 1911-12. The province of Bihar, however, came into being on 1st April, 1912³⁹ when it was separated from Bengal. Again on 1st April 1936⁴⁰ when Orissa was separated from it, Bihar began to function as a province by itself.

With the advent of new and independent Bihar, there were slight re-adjustment with respect to certain district. The States of Seraikela and Kharsawan were integrated with the

39. Roy Choudhary, P.C. - Inside Bihar, (Calcutta, 1962), page 3.

40. Ibid, page 19.

district of Singhbhum; while due to the pressing demand of the people and for the sake of proper management, the Saharsa sub-section of Bhagalpur district was separated to form a new district on 20th March, 1954. But at the same time immediately after the independence, there arose needs throughout the country to re-adjust the old boundaries of the provinces on linguistic basis. A State Re-organisation Commission (S.R.C.) was thus appointed in December, 1953, and ultimately on 1st November, 1956 as per S.R.C. recommendation, 1898.1 sq. Kms (732.9 square miles) of area in Purnea district were transferred to West Bengal.⁴¹ (Fig.16). Very recently it has been suggested that the Bihar Subdivision of eastern Patna district should also be separated to form a new district of 'Bihar'.

Political Developments :

In the early years of British days, the defence of the north west frontiers of Bihar engaged the serious attention of the English, particularly during fresh Maratha and Abdali raids. Bihar Plain and more specially the Ganga riparian tract was the main attention (Fig.17) so that Patna and Monghyr became the watch towers of the English — there was besides the pargana sepoy a garrison at Monghyr, a brigade at Patna and a battalion on the Karamnasa and a supervisor each at Bhagalpur and Rajmahal towns. Warren Hastings tried to consolidate the power of the East India Company and made efforts to bring under their control the hillmen of the Rajmahal Hills and other parts of Bihar Plateau. Repeated expeditions were thus made to suppress the

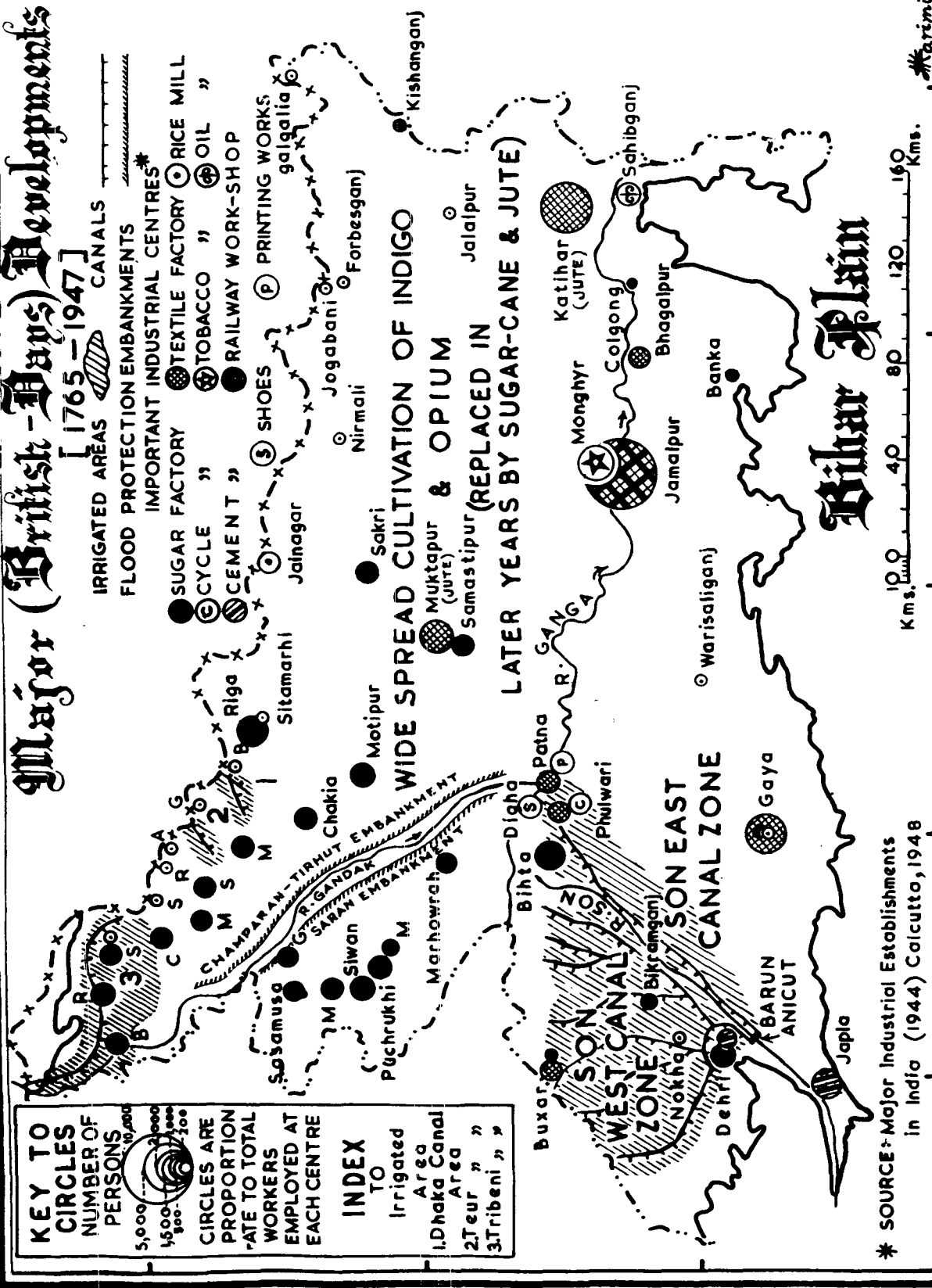
41. Prasad, S.D.- Census of India -1961, Vol.4, Bihar, Part IIA
(Patna, 1963) page 72.



T 696

Major (British-Maps) Developments

[1765-1947]



* SOURCE: Major Industrial Establishments in India (1944) Calcutta, 1948

FIG. NO.18

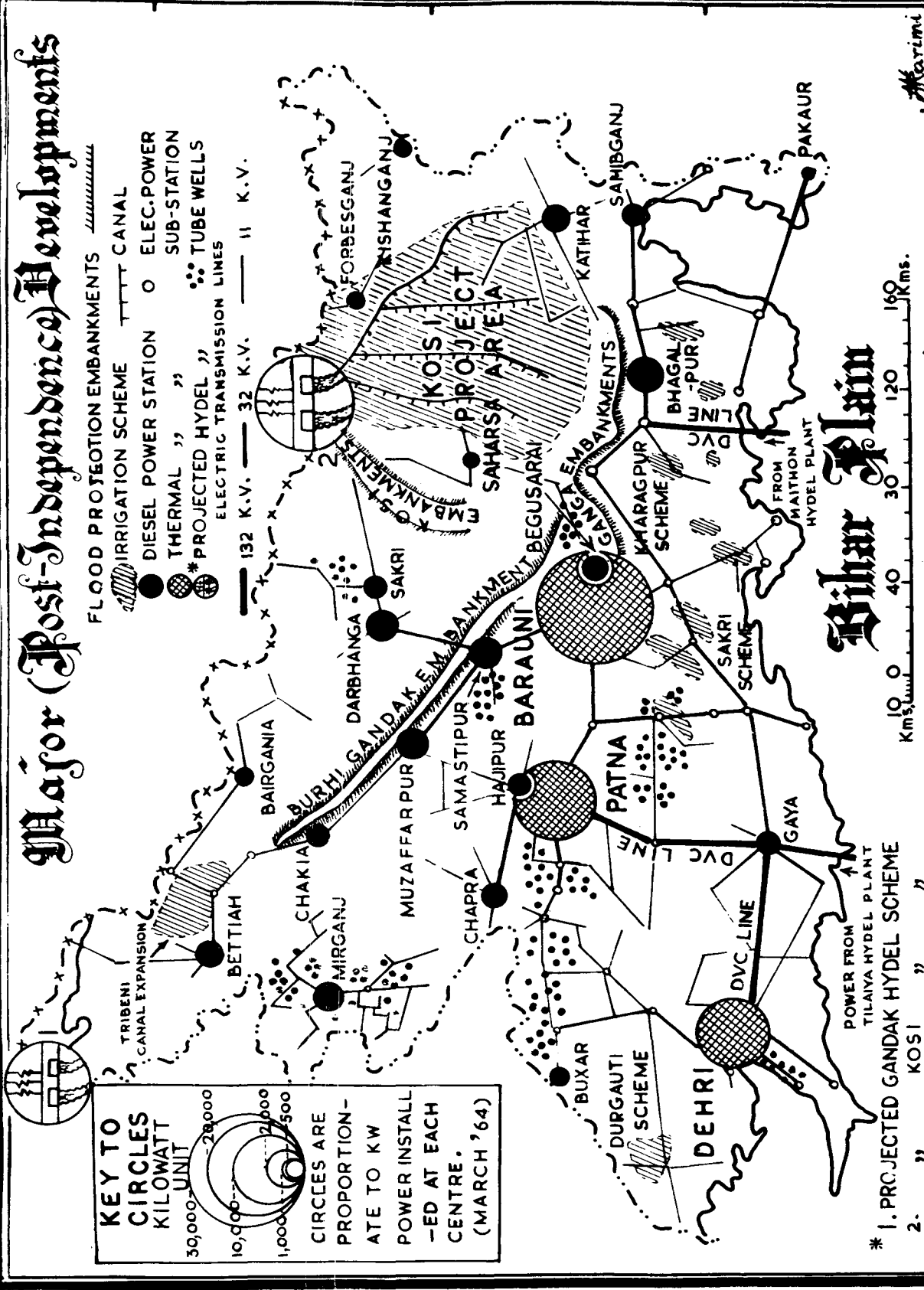
Santhals and Paharias of Santhal Parganas (Santhal Rebellion of 1855), the Hos of Singhbhum, Kols and Mundas of Ramgarh and Ranchi and Bhumijs of Manbhum (Kol Rebellion of 1831). But later on till 1857, no important historical event took place. But since 1857, there was political uprising among the people of Bihar against the British. The final and full transfer of powers to its own people was however available on 15th August 1947, when India became independent and declared a Republic on 26th January, 1950. Since then Bihar continues to develop into one of the important states of the Republic of India.

Economic Condition and the Major
Developments of the Modern Age.

Irrigation Schemes & Agriculture :

Bihar Plain with the advent of British rule experienced series of set backs during the first half of the 19th century on account of famines, scarcity and floods. In spite of all these, agriculture however showed slow but steady progress. Indigo plantations were carried on extensively in North Bihar while potato was newly introduced in specially South Bihar area. On account of the construction of the Son canal, irrigation system in 1873-76 in Shahabad, Gaya and Patna districts and the Tribeni Canal in 1909 in Champaran district, considerable areas were devoted in these districts for the cultivation of sugarcane. Tobacco and Jute were also introduced although a bit late and these two products since then have become leading crops of the eastern districts (Fig.18).

Major (Post-Independence) Developments



* 1. PROJECTED GANDAK HYDEL SCHEME
2. " KOSI "

SOURCE :- THIS MAP IS PREPARED ON THE BASIS OF GEOGRAPHICAL ACCOUNTS; DATA WERE OBTAINED FROM STATE ELECTRICITY IRRIGATION & OTHER DEPTS., GOVT. OF BIHAR, PATNA.

After the independence, there has been expansion of the Tribeni canal in eastern Champaran district. A few other minor irrigation schemes, such as Durgauti, Sakri, Kharagpur reservoir, Kiul river etc. schemes, have also been completed. The construction of flood control embankments to the right and left bank of Kosi each stretching for a distance of about 75 miles (constructed in 1955-56), and the construction of more flood control embankments along either side of Burhi-Gandak and Bagmati and along the northern bank of Ganga from Barauni to Khagaria and beyond in the east to Karagola, etc. have also been responsible for a more stable agricultural development than before. Besides some 496 tube wells in North Bihar⁴² and 517 in South Bihar⁴³ have been constructed specially in Buxar-Arrah; Maner-Bihta; Ekangar Sarai-Islampur-Bihar; Lalganj-Pusa; Darbhanga-Madhubani; Marhaura; Gopalganj-Siwan; Bagaha-Chanpatia; Begusarai-Barauni; and Dehri areas. All these schemes have in this way ushered in a new and prosperous agricultural economy in the entire region (Fig.19).

Industries :

In the early days of British rule in Bihar, cotton textile and saltpetre industries were the two main interest of the East India Co., cotton piece goods of Bihar were even exported by the Dutch, French and Danes. All these European nations had commercial factories in and around Patna. There were

42. Sinha, Dip Narain - Irrigation facilities in Bihar -
Bihar Independence Day Number
(Patna, 1958), page 48.

43. Bihar Through Figures - (Patna 1962), page 56.

factories or godowns also at Dumraon, Arrah, Sahar (on the west bank of Son facing Arwal), Sasaram, Jehanabad, Singhia, Chapra and Hajipur, etc. Later on when the cotton mills were declining in South Bihar the saltpetre factories in Tirhut occupied a significant position on account of the latter's great demand abroad for the manufacture of gunpowder. Indeed Chapra and Hajipur became the greatest refining centres of saltpetre in the entire plain. Side by side opium manufacture was also equally important and Bihar with its centres at Patna and Biharsharif etc. was regarded as a great producer of drug in the world. The total supply of opium for example in 1908-09 from Bihar was of the order ⁴⁴ of 8,000 maunds. Indigo manufacture in Tirhut was also gaining importance and in 1782-85 some of these factories were erected to ⁴⁵ extract indigo from the plant and this rose to 25 in 1810. But the Indigo and saltpetre industries by the end of the 19th century were replaced by sugar mills in the western districts and Jute pressing factories in Purnea district in the east. There were in 1944 about 36 sugar mills employing 18,766 workers and ⁴⁶ 3 jute mills employing 6,144 men in the whole region. Apart from these industrial growth the region during the period also experienced the localization of varied smaller enterprises here and there; so that Monghyr for its gun and cigarette, Jamalpur for its railway workshop, Arrah and Sasaram for soap, etc. were other notable industrial centres. Of the 11 railway workshops in

44. Divakar, R.R.- Bihar through the Ages - (Calcutta 1958) page 771

45. Ibid, page 771.

46. Large Industrial Establishments in India in 1944
(Calcutta 1948).

the region in 1944, Jamalpur employing 10,195 persons was by far the most important. Of the latest industrial developments carried on after independence mention can be made of the co-operative Sugar Mill at Barmankhi in Purnea district, Milk product factory Madhepura in Darbhanga district, paper mills at Darbhanga and Samastipur and the Barauni Oil Refinery etc. plants erected in Monghyr district all of which are located north of the Ganga river in Eastern North Bihar.

Development of Power :

A number of diesel and thermal electric plants have recently been erected throughout the region while the D.V.C. power from the Hydel Stations located over the Bihar Plateau have also been much extended to the north, so that hydel power to the extent of 40,000 K.W. is now being used at Gaya, Patna and Barun (Fig. 19).

South of the Ganga some of the plants erected or the private old plants now taken over by the Government are located at Patna, Dalmianagar, Gaya, Buxar, Bhagalpur, Sahibganj and Pakaur towns. Of these Bhagalpur in the east and Patna in the west are notable. Power from Patna today is transmitted by 33 KV lines and about 65 to 80 kilometres (40 to 50 miles) east and west of the city.⁴⁷

A number of sub-stations have been erected at Patna, Barh, Mokameh, Bakhtiarpur and Biharsharif in the east and Bihta and Koilwar in the west from where extensive 11 KV. distribution lines have been built for the supply of power to 142 tube-wells

47. Kurian, J. - Expansion of Power facilities in Bihar -
Bihar Independence Day Number (Patna, 1958)
Page 43.

and to electrify towns and villages enroute. Bulk supply is transmitted also to Arrah Electric Supply Company.

With a thermal power at Dalmianagar and partly also being linked with the D.V.C. power, the station today is transmitting power to adjoining areas to operate 114 tube-wells and to electrify the township of Dalmianagar, Dehri proper, Sonc Nagar (Barun), Sasaram, Bhabhua, and Aurangabad towns. The Gaya Electric Supply Company, a private enterprise erected in 1930 has been taken up by the Government since 1949 and much re-oriented and linked with high 132 KV lines to the hydel power house of the D.V.C. at Tilaiya. Under the tube-well irrigation schemes a 450 KW diesel generating station has been erected at Bumar. The nearby town of Dumraon has also been electrified and the lines are now extended to Barhampur and beyond to Arrah in the east while under the D.V.C. extension of transmission lines it is also linked to Barun in the south (Fig.19).

On account of the extension of the D.V.C. power to the Bihar Plain some hydel power is also available to Gaya, Barun and Patna in the main and to many other stations in the south western Bihar Plain. Under a separate scheme, 132 Kv lines of transmission has also been extended from Maithon hydel power house to Sultanganj sub-station via Deoghar. In this way the railway workshop at Jamalpur and the Bhagalpur Electric Supply Company are receiving bulk power of hydro-electricity from the D.V.C. sub-station of Sultanganj.

Development in North Bihar is also considerable.

Electric development has been carried on there in association with integrated plan of tube-well irrigation schemes. Initially diesel power houses were built at six stations namely Bettiah, Chakia, Sakri, Samastipur, Hajipur and Mirganj and these were progressively commissioned from 1952 onwards. Later on in order to meet the power requirements of more tube-wells under U.S. Technical Co-operation Aid Programme in Pusa-Samastipur-Begusarai area, the generating capacity of the power houses at Samastipur and Hajipur were augmented. In addition a new power house was erected at Begusarai for energising 50 tube-wells and for electrifying Begusarai and Barauni towns. Later on under the enlarged plan of electrification, power houses at Bairstania, Saharsa, Katihar, Chapra and Kishanganj were also erected or augmented. But unlike all these a large steam plant at Barauni (30,000 Kw)⁴⁸ has also been erected recently to meet specially the requirements of the great developments going on in the Barauni Oil refinery etc. plant.

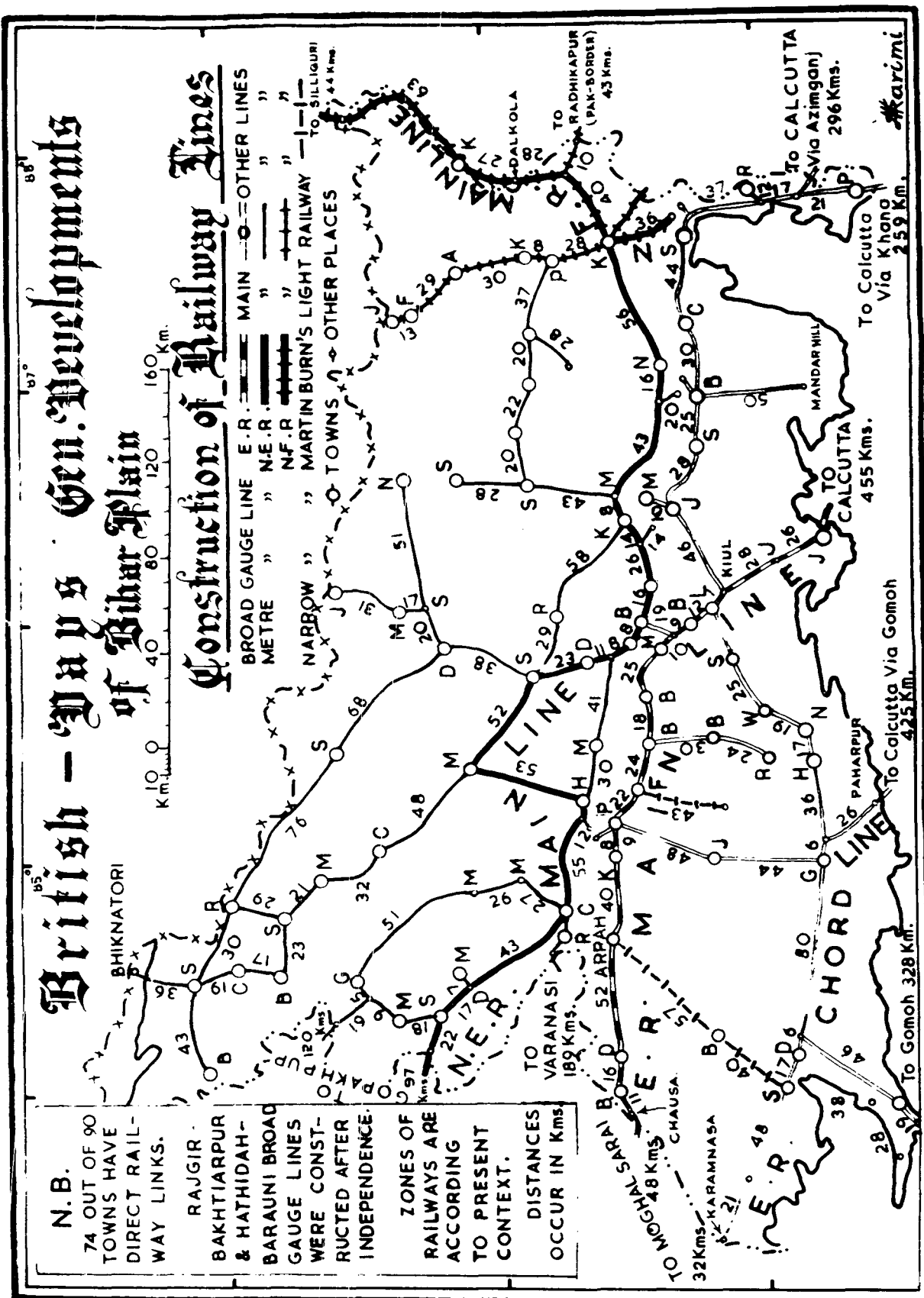
It is also hoped that in near future some hydel power will also be available from the new schemes associated with the Gandak (15,000 Kw.) and Kosi (20,000 Kw.) multipurpose projects.⁴⁹ These are expected to be completed by 1968-69. Power from the Kosi barrage (Hannuman Nagar in Nepal)⁵⁰ will be transmitted to Katihar via Forbesganj in the east and to Sugauli via Darbhanga and Muzaffarpur in the west.

48. This plant was commissioned in 1964 and another unit of 15,000 Kw is under construction.

49. Electricity Statistics of Bihar -Annual Report, (Patna 1964) Page 11.

50. 50% of the power produced by this project will be India's share -First Annual Electric Power Survey of India, (Delhi 1963) Page 21.

FIG. No. 20



SOURCE:- INDIAN BRADSHAW ; ZONAL RAILWAY (E.R., N.E.R. & N.F.R.) TIME-TABLES & GUIDE MAPS.

Railways :

Soon after the mutiny there had been large extension of railway communication lines in the region in the later half of the 19th and first decade of the 20th centuries. The first railway track laid down from Pakaur to Monghyr by way of Sahibganj along the right bank of the Ganga was constructed in 1851. This oldest railway line in Bihar Plain is today known as Sahibganj loop line of the Eastern Railway. Further eastward from Monghyr, following the southern high bank of the Ganga, the line was extended in 1862 beyond the western boundary of Bihar to Moghal Sarai in Uttar Pradesh. This section with a direct link to Howrah on the Hooghly (opposite Calcutta) in West Bengal via Jhajha constructed later, now constitutes the main line of the Eastern Railway (Fig.20). The Koilwar bridge across the Son, which was an important gap on this route was completed for a single line journey in 1862, and it was provided with double lines in 1870. The Grand Chord line traversing the interior western South Bihar Plain and passing through Sasaram, Dehri, Aurangabad and Gaya was constructed immediately after 1900; the section from Gaya westward to Moghal Sarai was completed in 1901 while the section from Gaya to Patna in the Plain and even beyond to Dhanbad over the ⁵¹ Bihar Plateau was made available to traffic in 1906. Apart from these Main and Chord lines, several other branches were also constructed simultaneously at the same time, giving access to other parts, so that South Bihar railway line section linking Iakhisarai and Gaya was completed in 1895; Patna-Gaya line

51. O'malley, L.S.S.- Census of India, 1911, Vol. 5 Part I
Report (Calcutta 1913) page 76.

providing a direct link to the Chord and Main line of the then East India Railway (now Eastern Railway) in 1895; Bakhtiarpur-Rajgir metre gauge line in 1903 (this is now replaced by a broad-gauge line) and the Son Nagar-Daltonganj branch connecting Hussainbad (Japla) section of the North Koel Plain with the Chord line was constructed in 1909.

North of the Ganga the most important metre Gauge line was Mairwa (from Gorakhpur in U.P.)-Siwan-Hajipur-Katihar extension along the left bank of the Ganga now known as N.E. Railway and was further extended via Kishanganj to Galgalia (N.E. Railway) on Darjeeling-Bihar border in the extreme north-east. The Kishanganj-Galgalia portion was however completed only in 1941. The importance of this through route can hardly be exaggerated as it traverses right across the whole length of North Bihar from its border with U.P. in the west to the borders of W. Bengal in the east. A number of other branches take off from this main metre-gauge line to the north along the border of Nepal or to traverse the northern higher bhangar tracts or extend southward for short distances from the main line to the Ganga opposite Patna (Mahendru Ghat), Monghyr, Bhagalpur (Barari ghat) and Sakrigali ghat. The construction of railway line in North

52. The Kishanganj-Silliguri narrow gauge line which was opened earlier was converted to metre gauge line from Kishanganj to Galgalia along Bihar-W. Bengal border in 1941 while the remaining Galgalia-Silliguri section was converted to metre gauge in 1948-49 - Roy Choudhary, P.C. - Bihar District Gazetteer-Purnea (Patna, 1963) page 362.

Bihar started in 1881 and by 1885 the main line from Mairwa to Sonepur via Siwan and Chapra and its extension to Pahleza ghat (opposite Patna) in Saran district and the other line from Manihari-ghat (Opposite Sakrigali) to Kasba via Katihar in Purnea district were completed and by 1909, most of the other gaps and extensions such as Katihar to Parbatipur (now in E. Pakistan) via Barsoi; Katihar to Malda (in W. Bengal); to Jogabani beyond Kasba; to Narkatiaganj (Shikarpur) beyond Sitamarhi; from Darbhanga to Khagaria, etc. were also completed.

Roads and Bridges :

The construction of metalled roads also progressed at a rapid rate. Prior to the British rule, the roads were few and neglected and metalled roads existed only in large cities. The old Sher Shah road was given priority, the metalled portion of which from Sherghati in the east to Krammasa river in the west by way of Aurangabad, Dehri and Sasaram, covering some 162 Km. (100 miles) was only a part of the famous G.T. Road, a trans-continental road of the northern Indian Plain (from Calcutta to Peshawar Valley). The south Ganga road running all along its right high bank was also metalled in parts. Gaya was linked with G.T. Road at two places - at Dhobi & Sherghati 34 and 32 Kms. (20 & 21 miles) respectively. Southward from Bhagalpur, a good metalled road running straight to the south was also constructed which penetrated down into the interior Chandan Plain. The development of metalled roads in North Bihar was however slow but these were not quite insignificant. The important roads constructed to the north of Ganga were Tirhut road and 'Ganga-

FIG. NO. 21

Post-Independence Gen. Developments of Bihar Plain

Improvements of Roads & Bridges

KEY TO BRIDGES

- I. SON BRIDGE
- II. PATNA RAILWAY
OVER BRIDGE
- III. RAJENDRA BRIDGE
(ON Ganga)
- IV. KHAGARIA BRIDGE
(ON Burhi Gandak)
- V. KURSELA BRIDGE
(ON Kosi)
- VI. DINGARAHAGHAT
BRIDGE
(ON Mahananda)
- VII. LAKHISARAI BRIDGE
(ON Kiul)
- VIII. JAMUI BRIDGE
(ON Kiul)
- IX. AKHARAGHAT BR.
(ON Burhi Gandak)

Kms. 0 40 80 120 160

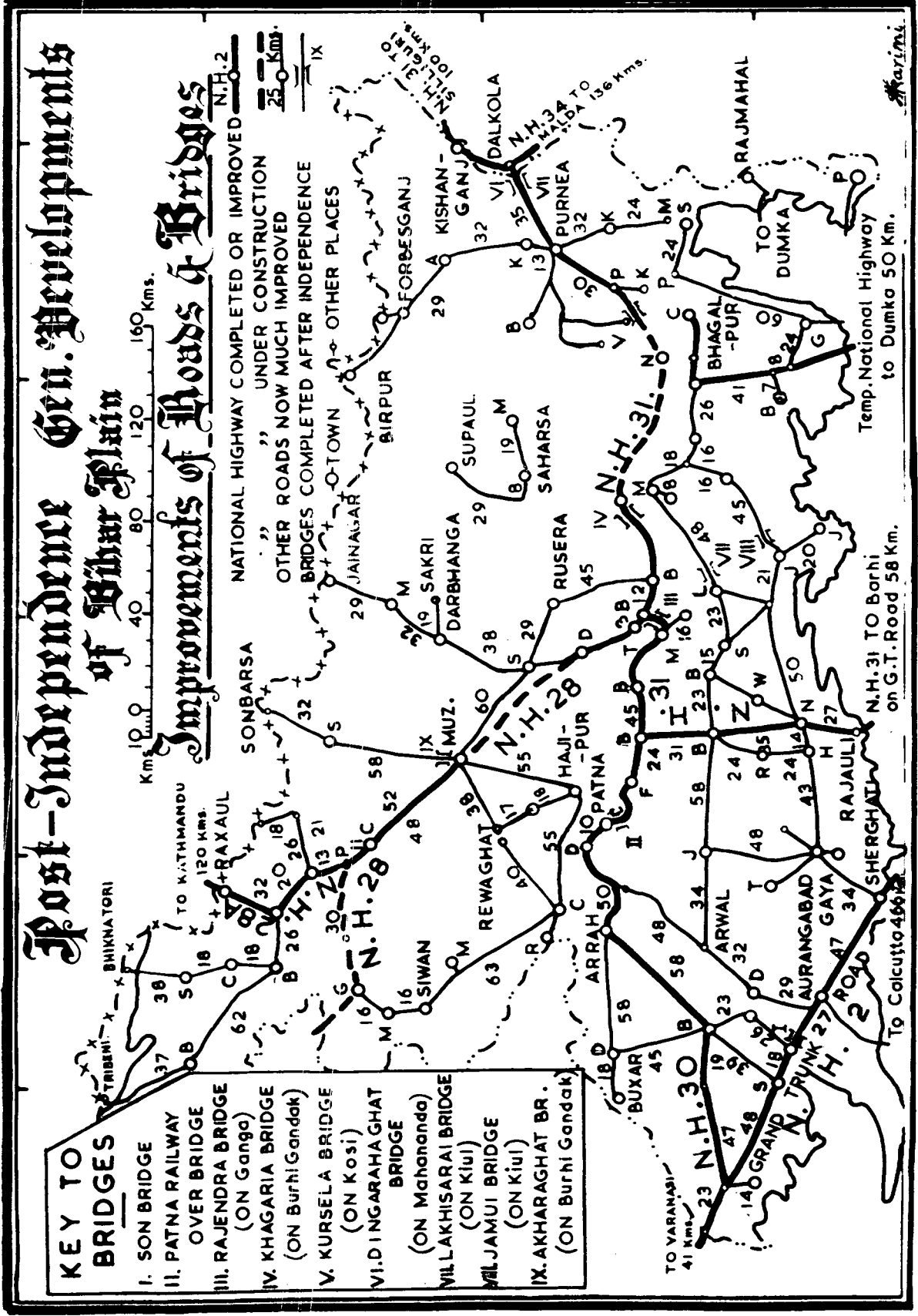
NATIONAL HIGHWAY COMPLETED OR IMPROVED

" " UNDER CONSTRUCTION

OTHER ROADS NOW MUCH IMPROVED

BRIDGES COMPLETED AFTER INDEPENDENCE

OTHER PLACES



SOURCE :- ROAD MAP OF INDIA (1:1 MILLION), DEHRADUN 1952; ROAD MAP OF BIHAR (1:10 MILES), PATNA 1959; & INFORMATION REGARDING LATEST ROAD DEVELOPMENT PLAN WAS OBTAINED FROM GOVT. OFFICE, SECRETARIAT, PATNA.

Darjeeling' road which traversed the present Plain region from Karagola on the Ganga to the Mahananda river near Dalkola and passed through Purnea (Fig.21). Other minor roads were from Siwan to Sonapur via Chapra; Hajipur to Muzaffarpur and beyond to Darbhanga; etc. But the real development of metalled roads in Bihar Plain is in accordance with the Nagpur Plan based on the principle of 'grid & star formula', which was launched in 1946-47 and since independence the work of road development has been entrusted to Public Works Department. Indeed the growth of roads in charge of P.W.D. has been phenomenal since 1947 and of these six of the great through routes are designated after N.H. Act of 1956 as 'National Highways', and are managed and controlled by the Central Government. These are the G.T. Road (N.H.No.2) the Barhi-Rajauli-Lokameh-Barauni-Katihar Road (N.H.No.31); the Mohania (on G.T.Road) and Bhaktiarpur on (N.H.No.31) link via Arrah and Patna(N.H.No.30); Tilarath(Barauni)-Muzaffarpur-Pipra-Gopalganj proposed road (N.H.No.28); Pipra-Raxaul road (N.H. No.28A) and the Dumka-Bhagalpur-Colgong road which is regarded as provisional national highway and is controlled and managed at present by the Central Government. The Grand Trunk road is straight highway 163 kilometres long (portion lying in Bihar Plain)

53. Sohoni, S.V.-Road Development and Nagpur formula, Bihar 1952-53 (Patna, 1953) page 74.

54. Iall, Y.K.- 'Development of roads in Bihar'. Indian Roads Congress Supplement, Indian Nation English Daily (Patna December 14, 1961).

and passes direct through Sherghati, Aurangabad, Dehri and Sasaram towns while it lies only 37 Km. (21 miles) south of Gaya and about 15 Km. (9 miles) north of Bhabhua. The only gap in the whole length was at the Son where a bridge has been constructed⁵⁵ under the I.D.A. (International Development Association) Scheme. The national highway No.31 provides a direct link between North and South Bihar by way of Rajendra Bridge. The four important obstructions on its passage on account of the Ganga, the Burhi Gandak, the Kosi and the Mahananda have all been overcome on account of the construction of 'Rajendra Pul', Khagaria, Kursela and Dingarahaghat bridges respectively. National highway No.30 is a direct link between N.H.31 and N.H.2 and passes through Patna, the capital of the State and also touches the great cantonment at Dinapur and the former military aerodrome at Bihta. The proposed N.H.23 when completed will provide direct link between the towns of eastern and western North Bihar. The Pipra-Raxaul (N.H.29A) road provides a direct link to Tribhuvan Raj Path connecting Raxaul and Kathmandu and its importance is much enhanced on account of the construction of a big aerodrome at Raxaul which, when completed, will be next only to Dum Dum in India. Apart from these national high-ways, a number of other roads links are also notable. These are classified according to their importance and management as State highways and major district roads, etc. Dumka-Bhagalpur road and its extension to

55. Sinha, D.K.- 'National Highway & World Bank Credit in Bihar'-Indian Nation -English Daily (Patna December 14, 1961).

the east to Colgong can be regarded as the most important road in eastern South Bihar Plain. This road at present is under the supervision of Central Government. The 'Third Five Year Plan' of the road development led each district to have almost equal share of road development by 1966.

The integrated developments of flood control canal and tube-wells etc. irrigation schemes and major projects like Kosi or Gandak; the erection of diesel and thermal power stations and the extension of D.V.C. hydel power to Gaya, Barun and Patna in the west and Sultanganj, Jamalpur and Bhagalpur in the east; the development of road and railway communication lines and improvements of bridges and aerodromes in the entire region, have all ushered in a new era towards the economic prosperity of Bihar Plain in general and towards its urbanization in particular.

PART II

**Trend of Urbanization
&
Distribution of Towns**

Chapter Three
Origin & Evolution of Towns.

CHAPTER THREE

ORIGIN AND EVOLUTION OF TOWNS

Origin and Evolution of Towns During ancient period (Prior to 12th Century A.D.)

The Bihar Plain abounds in ruins. These old sites have been specially studied and at some places excavated and underground archaeological treasures unearthed by Europeans Scholars like Waddell, Spooner, Wilson, Mill (who was assisted by Surveyor Ahmad Hussain), Buchanan and Cunningham, Bloch and Stain and various others. Very recently investigations have been made by the Jayaswal Research Institute in accordance with the old accounts of the Chinese travellers like Fa-Hian, Hiuen Tsiang and I-Tsing. In the analysis of all these, it is revealed that most of these sites were great cultural as well as political centres of the region in the past. The ancient land of Bihar as we have noted earlier has seen the rise and fall of Empires, birth of religions and philosophers. Successive invasions from outside, have brought with them not only men of different races but of different cultures and traditions and they have enriched this land with their remnants.

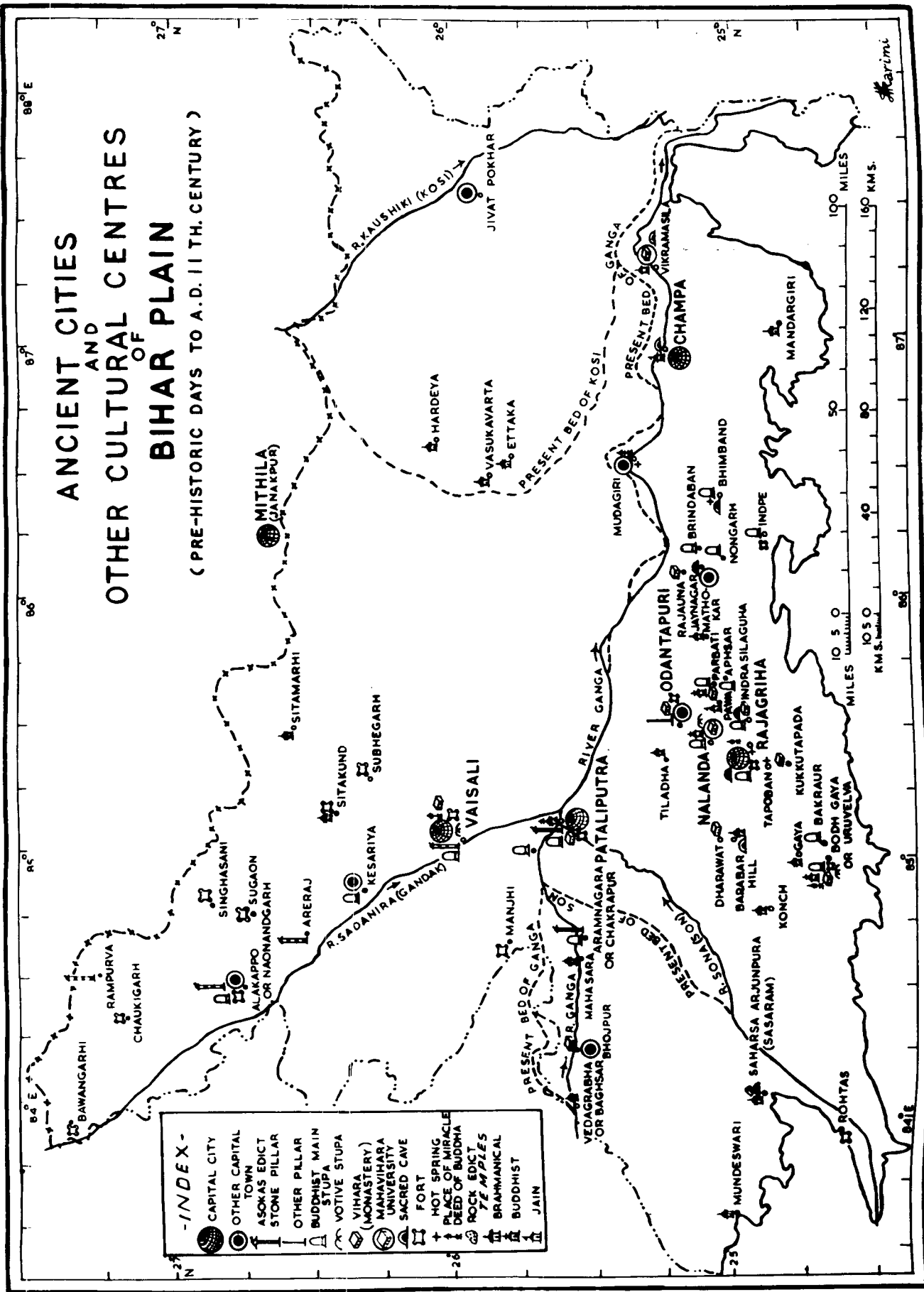
Bihar is thus proud to contain the ruins of some of the oldest cities of India such as Rajagriha, Pataliputra,

Vaisali, Champa etc., forming capitals of virile republics and earliest India-wide Empires. Besides being the state capitals, such cities were also located at the cross-roads of great ancient routes. Vaisali for example was an important nodal point in the northern plain and Pataliputra along the Southern bank of the Ganga were important nodal points. Rajagriha in South Bihar Plain was also equally important. It marked the southern terminus of the Royal Nepal-Rajagriha Highway. A few other roads connected Rajagriha with Bodh Gaya and Jethian in the west and south and Mudagiri (Monghyr) and Champa in the east. Pataliputra and Champa had even more favourable location than others. Besides being located on the Royal Highways, they were also facilitated because of their Ganga-side location. While Vaisali and Rajagriha were the great imperial cities, Pataliputra and Champa were important trade centres and business emporiums where traders assembled from the various parts of the kingdom and where things were even imported from and exported to Ceylon and other South-east Asian countries.

Bihar Plain has also the distinction of possessing the largest number of sacred monuments and Buddhist monastic sites which were directly or indirectly responsible for the growth of many Nagaras (cities), important Nigamas (smaller towns or Gramas (sacred villages), while there were places like

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1. Cunningham, A.- Ancient Geography of India, edited by Majumdar Shastri (Cal.1924), page 513.
 2. Carlleyle, A.C.L.- Tours in Gorakhpur, Saran & Ghazipur A.S.I. Report 1877-80 (Cal.1885) page 55.

FIG. NO. 22



SOURCE : - THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL & GEOGRAPHICAL ACCOUNTS.

Vaisali, Bodh Gaya, Rajagriha, Pawapuri and Champa which were sacred to Buddhists and Jains alike and were centres of attraction for the people believing in these Dharmas. These places therefore flourished as important sacred cities of the day. Two of the great universities 'Mahasangharamas' of ancient world also stationed in this region, one at Nalanda in Magadh and the other at Vikaramasila (identified with Patharghatta near Colgong) in Anga. (Fig.22)

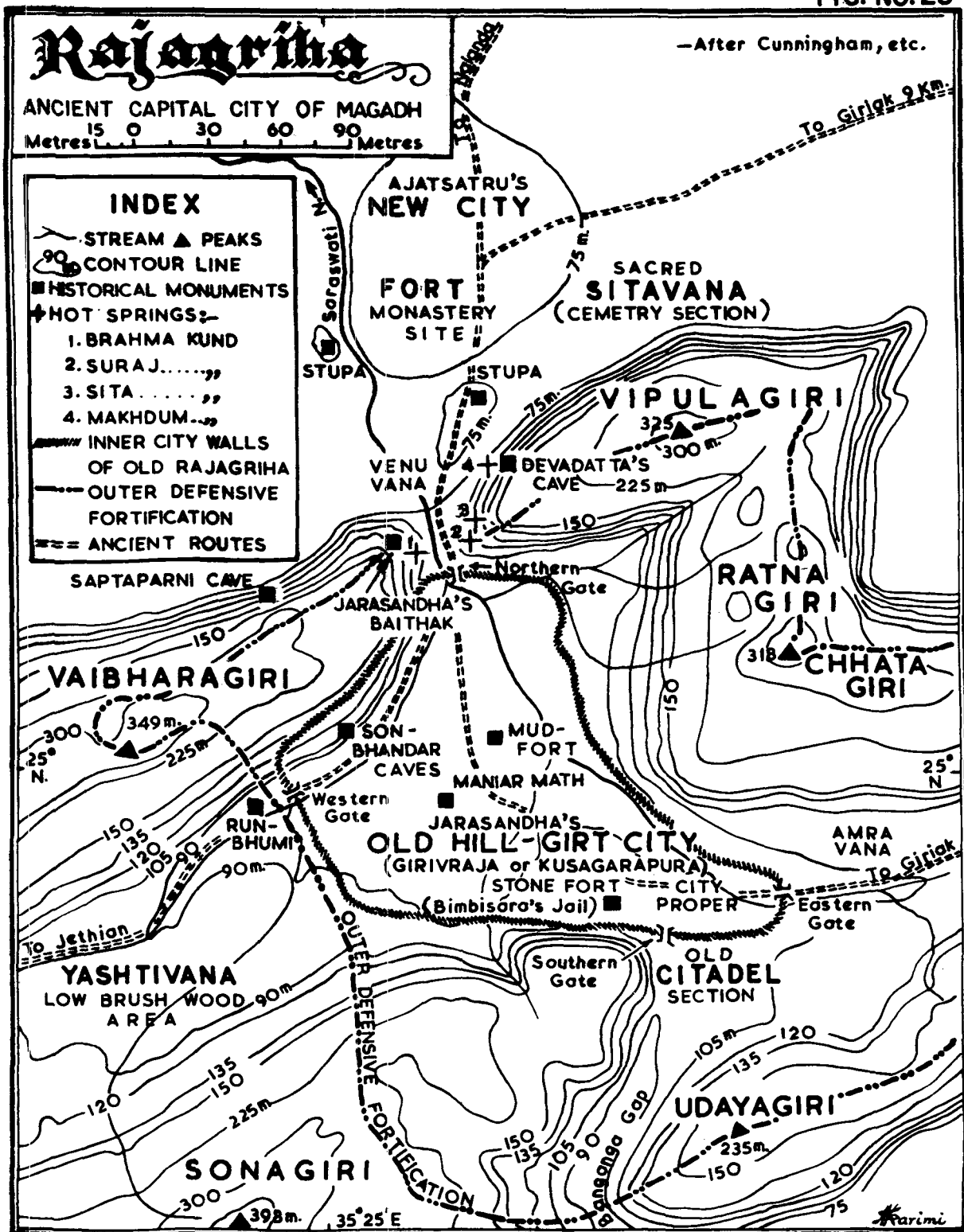
OLD CAPITALS - Metropolitan Cities -

There are places which have deep cultural as well as political ties with historical events of different dates extending over thousands of years. Notable among them are the old fortified cities like Rajagriha and Pataliputra forming the nerve centres of trades mart and great metropolises of the mighty Magadhan Empire. These great centres of the pre-historic and early historic period can be regarded as the cities of the first order.

Rajagriha - (Lat. $25^{\circ} 0' 0''$ N. Long. $85^{\circ} 25' 30''$ E.)³ the hill-girt city, which is also mentioned as Grivraja or Kusagara-⁴
pura was one of the six ancient cities of India. Besides being the capital of Brihadratha and his son Jarasanda, it was within

-
3. This corresponds to the old Girigraja or Kusagarapura of Jarasandha; the geographical location for Ajat Satru's new city is Lat. $25^{\circ} 1' 40''$ N. Long. $85^{\circ} 25' 30''$ E.
 4. Rajagriha which means 'the Royal residence,' the ancient capital of Magadh was also called Grivraja, 'hill surrounded' Because of the predominance of Kusa grass, it was also known as Kusagarapura, 'town of Kusa grass', Hunter, V.W.-Bengal District Gazetteer, Vol. II (London 1877), Page 79.
 5. Other being Saketa, Saravasti, Kausambi, Champa and Kasi.

FIG. NO.23



the historic times (500 BC) the glamorous metropolitan city of Magadhan Empire of Bimbisara and Ajatsatru. Located at the junction of important ancient routes south of the Ganga in the Magadh Proper, it once formed an important trade centre. It lay 11 kilometres (7 miles) south of Nalanda or about 105 Kms. (65 miles) south east of Pataliputra. The city was situated in a valley drained by the Saraswati stream and was surrounded on all sides by a massive cycloplan wall 5 metres (17 feet) thick and about 2.5 to 5 metres (8 to 16 ft.) high following the crest of various peaks, collectively called Rajagriha Hills. The massive fortification walls with watch-towers withstanding the ravages of past 3,000 years are still seen.

The city proper was located centrally inside the valley fortification and was surrounded with an inner ring of wall 7 Km. (4½ miles) in circumference with four gates (Fig. 23) the principal gate being in the north and was afforded by the natural outlet of Saraswati Nadi. The city walls in outline assumed the shape of a boot with its toe at the south eastern end. Its central location within the valley and yet another ring of city fortification gave it a natural safety, but it probably had the greatest disadvantage of not having sufficient space for expansion.

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6. O'malley, L.S.S. & James, J.F.W.- B.O.D.G. 'Patna' (Patna 1924) page 227; Lal, R.R.- Rajgir (Bihar Series No. 6), (Patna 1954), pages 19-20.
 7. Some of the important peaks encircling the old city are Vaibharagiri (in the west), Sonagiri, Udayagiri (in the south) Sailagiri (Gridhakuta or Vulture's Peak), Chatagiri in the east and Vipulagiri (in the north).
 8. Hunter, W.W.- Bengal District Gazetteer, Vol. II, (London 1877) page 80.

The palatial section, the citadel containing the royal palaces and the more aristocratic quarters were located in the southern part of the hill girt area outside the city proper, while the royal stable occupied the northern section. Outside the old hill fortification, lying about $1\frac{1}{2}$ Km. (1 mile approx.) north of the northern gate of the old city there was yet another Ajatsatru's new capital and city. It was an irregular Pentagon in shape and enclosed a circuit of nearly 4.8 Km (3 miles). The palace in the new city lay to the south western section and had a gate opening towards the south.

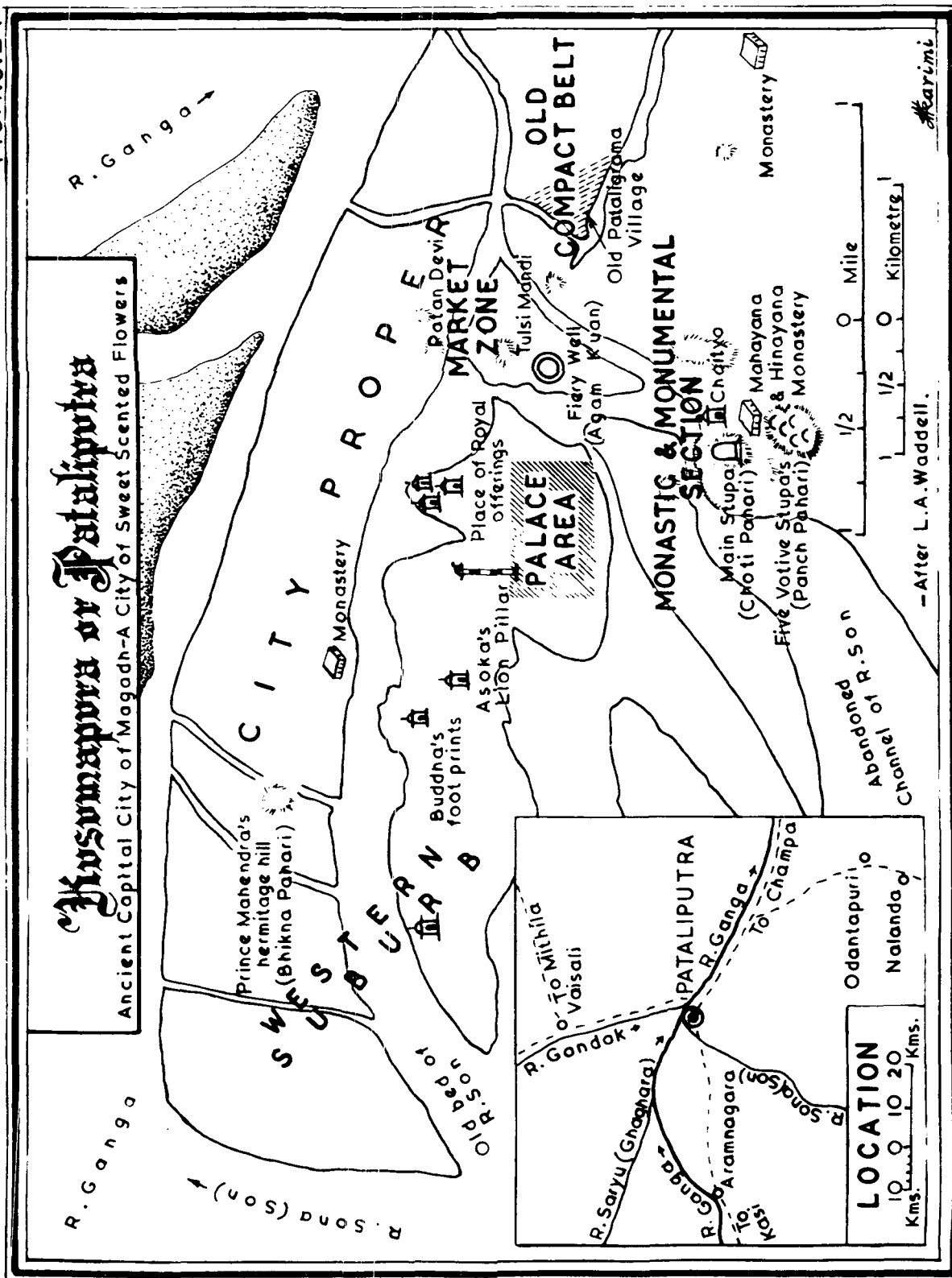
By the time Fa-Hian visited the city in the early 5th century A.D., it had already lost its past glamour specially because of the shift of the capital to Pataliputra by Udaya and finally by Kakavarma (Kalasoka). Hiuen-Tsiang in 637 A.D., found it almost deserted. It then contained only a thousand families. Even to this day it is no more than a little township flourishing and expanding on the ruins of Ajatsatru's new city.

Pataliputra - (Palibothra of the Greek and Srinagara of the Pali inscriptions - (Lat. $25^{\circ} 35' 40''$ N, and Long. $85^{\circ} 11' 30''$ E) the city of the sweet scented flowers and identified with the city of Patna with its central citadel at Kumhrar dates back to the

9. O'malley, L.S.S. & James, J.F.W. - B.O.D.G. 'Patna'
(Patna 1924), page 226.

10. It is certain that the various names such as Pataliputra Kusumapura and Pushpapura - all have connection with flowers the mystery of which has not yet been fully explained. Indeed even a part of Patna not far off towards the south-west is still known as 'Phulwari'.

FIG. NO. 24



days of Ajatsatru who built a fort here in 500 B.C. while Udayin founded the city (430 B.C.) and finally Kakavarma (Kalasoka) made

it the permanent capital of Magadh. It gradually attained great prosperity under the Nandas and Mauryas and was indeed during Asoka (273 B.C.) the splendid capital and earliest historic metropolis of the first great Indian Empire -- Magadh. The total population of the city during Chandra Gupta Maurya's time

according to Megasthenese was 4 lakhs.

Pataliputra was located at the confluence of the Saryu (Ghaghara) the Sadanira (Gandak), the Ganga and the Sona (Son) and was at the cross-roads of the Nepal-Rajagriha Royal Highway and Champa-Kashi route. Thus the natural advantage of the riparian site along the bank of the mighty Ganga (Fig.24) and the strategic location as a base of operation against the strong Lichchavi clan across the Ganga in the north must have been the prime factor which induced King Ajatsatru to build a fort here. Its prosperity and growth can also be attributed like Champa to its being the riverside trade mart and centre of all business activities of the entire empire.

Several distinct functional sections can be recognised

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11. 'Ajatsatru', states Lassen, the German Indologist, 'appears to have had long the intention of conquering Vaisali, for it is recorded that his two ministers founded in the village of Patali, a fortress'. The Vasu Purana records that Udayin, son of Ajatsatru founded the city of Kusumapura (the city of flowers) or Pataliputra round the fort in the fourth year of his reign - Glories of Bihar, edited by Lall, R.R. - (Patna 1953) Page 18.
 12. Dutta, K.K. - Introduction to Bihar - Indian History Congress (Patna 1946), pages 6 & 7.
 13. Waddell, L.A. - Report on the excavations at Pataliputra - (Calcutta) 1903) page 5.

in the old city. The Palatial section with Asoka's pillar as also his splendid palace including a stone-pillared hall lies near Kumhrar to the south-east of the present city, a mile to the south-west of Gulzarbagh station (Fig.24)¹⁴. The palace probably stretched from Choti Pahari to Kumhrar with a north-western extension through Bulandibagh, Sandalpur, Bahadurpur even as far as Pirthipur and that the ruins on which the Dargah now stands probably represent a detached northern portion of the palace on the way to the Ganga. This thus gives the approximate area of the palace as over 10 Sqr.Km. (4 sqr.miles), with somewhat sinuous outline towards the south, bordering the old channels of the river Son. The palatial section contained many chambers including underground passages for the security of the kings and the treasury. Apartments for different castes and professions were also marked off.

The monastic and monumental section was located just south of the palace. It extended from Choti Pahari southward to Panch Pahari. Beginning from north the Choti Pahari represents the great stupa built by Asoka containing the relics of the Tathagatha (Buddha). South of it lay probably the Mahayana monastery while still to the south near Panch Pahari was another Hinayana monastery -- the two together according to Fa-Hian

14. After Waddell, Wilson (Principal Patna College) Mill etc. who excavated the region with the help of Surveyor Ahmad Hussain.

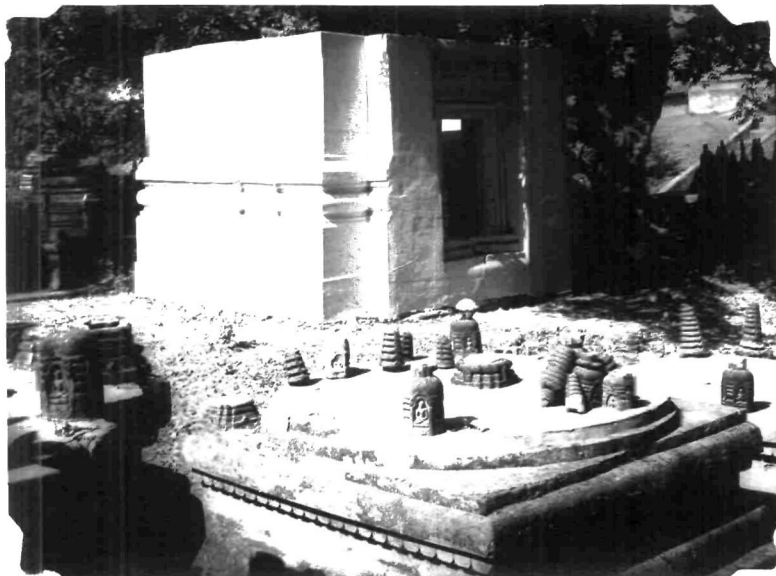
15. This is one of 80,000 stupas built by Asoka throughout his kingdom - Waddell Report on the excavations at Pataliputra (Calcutta 1903), pages 47,70 and 72.

No. 3
The multipillared Asokan
Palace Hall, Pataliputra



No. 4
The hill-girt Saraswati
valley, Rajagriha

No. 5
The Chaitya & Votive
Stupas, Bodh Gaya

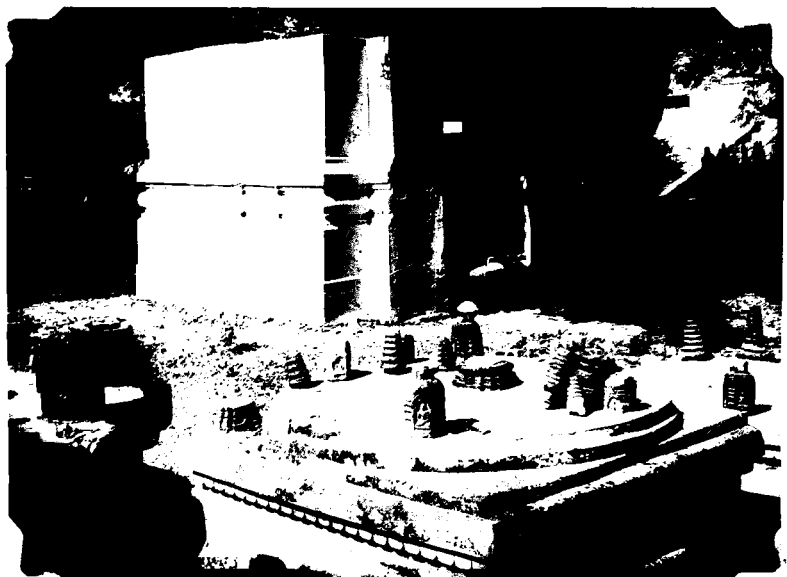


No. 3
The multipillared Asokan
Palace Hall, Pataliputra



No. 4
The hill-girt Saraswati
valley, Rajagriha

No. 5
The Chaitya & Votive
Stupas, Bodh Gaya



16

(about 400 A.D.) contained six to seven hundred monks. Still to the south the Bara Pahari represents the little artificial hill built by Asoka to accommodate his great high priest Upagupta, the saint who converted Asoka to Buddhism while in the extreme south the Panch Pahari close by represents the five stupas. The Holy well section occupied a position in between the palace in the west and the city in the east and adjoining the market place but lying south of it. The holy well called Agamkuan, is pointed out by various experts as the site of the royal slaughter house or out-kitchen which as Dr. Kern suggests was afterwards transformed into Asoka's hell which contained fiery cauldrons and fearsome ovens for terrible torture to the prisoners. The market mart of the city lay to the north-east of the great palace and close to the main nucleus of Pataliputra section but lying northwest of it. It was a winding street one ¹⁷Li in length and corresponded to the place now known as Tulsi Mandi. The city lay about a kilometre to the north of the palace and was probably separated from the latter by a channel of the Son, a part of which is still to be seen and is called Gun Sagar. This residential section with distinct apartments with respect to various activities and castes extended for about 14.5 Kms. (9 miles) from Bhikna Pahari (hermitage hill of Mahendru) or even beyond in the west,

16. Waddell, L.A.- Report on the excavations at Pataliputra-
(Calcutta 1903), page 70.

17. Ibid, page 46

18. As mentioned by Hiuen Tsiang and Fa-Hian;
Approximately 5 or 6 Li distance of the chinese
traveller equals one mile.

to the place in the east now known as Nagla. The width from north to south was about 3 Kms. ($1\frac{1}{2}$ miles). The exact eastern and western limit of the city is still obscure and no definite line can be drawn on the map. The moats on the south sides averaging about 183 metres (600') in width still retaining water for the greater part of the year indicating today the old bed of the Son, probably mark the ditch which encompassed the city then.¹⁹ Present Patna city section according to Waddell without doubt occupies the part of the old site of the main residential area of old Pataliputra Proper and it was probably in this section at the southwestern corner that the village Patali (Pataligrama) stood and formed the nucleus of the city. The city was mostly adorned with wood built walls and the carvings and sculptures that ornamented the windows, doors and walls, were of magnificent character. In later years specially during Asoka's time many of the stone buildings were also added and the buildings in general were two-storied.

The magnificent city of Pataliputra, however, after the Mauryas, due to shift of the capital to Kanauj in U.P. etc. dwindled only to the status of a small commercial town and for nearly a thousand years, it remained an small town -- a city of

19. As described by Megasthenese in about B.C.300:- 'A city 80 Stadia (9.2 miles) in length and 15 Stadia (1.7 miles) in breadth. It is of the shape of a parallelogram and is girded with a wooden wall, pierced with loopholes for the discharge of arrows. It has a ditch in front for defence and for receiving the sewage of the city. This ditch which encompassed the city all round was 600 ft. in breadth and 30 cubits in depth and the wall was covered with 570 towers and had 64 gates' - Waddell, L.A. - Report on the excavations at Pataliputra - (Calcutta 1903) page 20.
According to this account the circumference of the city would be 220 Stadia or $25\frac{1}{2}$ miles ($40\frac{1}{2}$ Kms). - Hunter, W.W. - S.A.B. Vol. II (London 1877), page 67.

decadence following the sack by Huns in the 6th century, plague epidemics, terrible earthquake in later years probably leading to fire or even slumping, desertion of the Son as it shifted to the west, and encroachment by the Ganga along the northern face of the city. Indeed even today during every high and dangerous flood level mark, there is a great uneasiness in Bankipur and Patna city and collapses occur very often under the pressure of high flood water. It is suggested that about $\frac{1}{2}$ to one mile breadth of the old city facing the Ganga has probably been eaten up by the dashing water of the Ganga. By 1266 there was no trace actually of the old city and Patali was little better than
20
a nest of robbers.

Other Capital Cities - Apart from the imperial metropolitan cities which were the nerve centres and trade emporiums of the early Indian empires, Champa, Mithila and Vaisali were also important regional cities.

Champa the great capital of the Anga Des which lay to the east of Magadh was located on the southern bank of the Ganga some 140 or 150 Li (37 to 40 Kms or 23-25 miles) to the west of a hill crowned with a temple. This hill is now recognised by Cunningham as Patharghata which is exactly 39 Kms. (24 miles)
21
east of Bhagalpur. The site of this ruined capital city of ancient Bihar lies to the western suburb of modern Bhagalpur city. The locality is today known as Champenagar which was then

20. Hunter, W.W. - S.A.B. - Vol. II (London 1877), page 68

21. J.A.S.B. - Vol. 66, Part No. 2, (Calcutta 1897) page 85

located at the confluence of the Ganga and the Champa (identified as Chandan) rivers. The name of the city probably derived from the ²² Champaka trees which constituted the main feature in the landscape of the site. It is pointed out by the historians as one of the ²³ six great cities of Ancient India and in the 6th century B.C. was specially noted for its trade and commerce with south-eastern Asian countries as well as Ceylon. Thus the strategic and commanding position along the Ganga and the commercial location as a river port facilitating trade and commerce just like Pataliputra of later dates, must be the essential factors towards its growth. But soon after the annexation of Anga with Magadha and erection of a fort of Patali and shift of the Great Magadhan Empire to Pataliputra Champa's glory dwindled due to the rising prosperity of the new capital.

Mithila or Chansura identified as Janakpur, a town at a short distance to the north-west of Darbhanga district, in the Nepal territory, was the capital of the Videha Kingdom ruled in early Vedic days by Janaka kings. A tradition still points to the villages of Phulhar in the north-east corner of the Baniapati thana of Darbhanga district, as the flower garden where king Janaka's priests used to gather flowers for the worship of the gods and identifies its temple with that of the Devi Girija ²⁴ worshipped by Sita before her marriage with Rama.

22. Pandey, M.S. - History & Topographical Geography of Bihar (Patna 1963) page 173.

23. Dutta, K.K. - Introduction to Bihar-Indian History Congress, (Patna 1946), page 4.

24. O'malley, L.S.S. - B.D.G. 'Darbhanga' (Calcutta 1907) page 11.

Vaisali identified as Basarh (Lat. $26^{\circ} 0' 0''$ N and $85^{\circ} 7' 0''$ E) in Muzaffarpur district lay some 32 Kms. (20 miles) north of Hajipur and about the same distance west of present Muzaffarpur city along the eastern bank of the Gandak river (Fig. 22). It occupied a nodal point with respect to the great highways of the age. Roads radiated in almost every direction from the place - to the north following the royal highway it was connected to Nepal or probably by a branch from either Kesariya or Mandongarh it was also linked to Kusinagara in U.P. in the north-west while the same royal highway towards the south connected it to the Magadhan capitals Pataliputra or Rajagriha that lay across the Ganga. Fa-Hian is said to have followed this route while entering Bihar from the north-west and after paying a visit to Vaisali proceeded southward to Pataliputra (Palin-fu). Another important road probably ran also along the northern bank of the Ganga for Kasi. The Janaka city of Mithila and Anga's capital Champa were also connected with Vaisali by important eastern routes. According to Ramayana (Bala Sar 47 vv 11-12), the city was

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25. Smith, V.A. - 'Homage to Vaisali' edited by Maitur & Y. Mishra (Muzaffarpur 1948) page 150.
26. 'Fa-Hian's Travels in the Vaisali Region' translated by Prof. Samuel Beal - 'Home to Vaisali' (Muz. 1948) pages 136-37.
27. Hiuen-Tsiang in early 7th century A.D. after crossing the Ganga at Arrah is said to have followed this route to come to Vaisali - Cunningham, A. - 'Ancient Geography of India', edited by Majumdar Shastri (Calcutta, 1924), page 504.
28. Sarkar, S.C. - 'The pre-historic ancient historical traditions of the Vaisali region! 'Homage to Vaisali' (Muzaffarpur 1948), page 61.

founded by one named Visala who called it Visalapuri. In course of time Visalapuri or Vaisali became the seat of the great Vajji confederacy and centre of power and capital of the Vaisali republic of Lichchavi clan, the most powerful of all in the whole of the northern plains of India. After the overthrow of the monarchical rule at Mithila and shift of the power to Vaisali, the city grew both culturally as well as politically. At the time of the conquest of this city by king Ajatsatru in 490 B.C., the city is said to have been at the height of its prosperity and its citizens numbered 168,000. The city area was then made up of three distinct sections namely Vaisali proper, Kundrapura (Kundagrama) and Vaniagrama occupying respectively the south-eastern the north-eastern and western sections. These sections clearly marked the separate quarters of the three communities namely the priests (Brahman) residing in the section to the south-east or Vaisali proper now known as Basarh, the warriors (Kshatriya) occupying the north-eastern section of Kundagrama now known as Basukund and the commercial community (Bania) concentrated in the western section of Vaniagrama. It was in this last named i.e. western section that Mahavira belonging to Kshatriya family and born in Kundrapura was successful in his mission of religious preaching and became the hero of the Baniyas. The fortress palace was located in the heart of the

29. Lew, B.C.- Vaisali in ancient literature-Homage to Vaisali (Muzaffarpur 1948), page 29.

Mukherjee, R.K.- Vaisali in Indian history and culture, Homage to Vaisali (Muzaffarpur 1948) page 4.

30. Mukherjee, R.K.- Vaisali in Indian History & Culture - Homage to Vaisali (Muzaffarpur 1948) page 5

south-eastern sections of Vaisali proper; the same today lies in ruins under the name 'Raja Visal Ka Garh'. Some historians are of the opinion that Vaisali, Kundarpura and Vaniagrama were separate towns and the two last-named probably flourished as suburban cities of the Citadel city of Vaisali. According to Tibetan tradition, there were about 7,000 14,000 and 21,000 houses in Vaisali, Kundragrama and Vaniagrama respectively; yet to the west and northwest of the city was a vast natural forest called Mahavana in which in later period close to the city many Buddhist monuments were erected such as a monastery, Asokan Lion edict pillar; stupas enshrining the relic ashes of Budha and Ananda, commemorating the place where the second Buddhist council was held and where Buddha took his last walk. The city as a whole was surrounded by three walls which had three gates with watch towers and buildings. After the annexation of the city and the kingdom with Magadh, it appears to have decayed gradually though even till Mauriyan times it was an important political and cultural centre in the North Bihar Plains, but by the end of Gupta period it probably lay deserted. At a time when Hiuen Tsiang visited the place commanding sites and old foundations were seen at every step but with the lapse of years it was entirely destroyed. But the chief cause of the city's ultimate disappearance was Huna invasion and plunder of Wang Hsuan Tse during the confusion which prevailed after the death of Harsha.

Seats of Local Chieftains - Apart from the imperial cities and other capitals of major empires and republics a few

31. Mukherjee, R.K. - Vaisali in Indian History & Culture -
Homage to Vaisali (Muzaffarpur 1948) page 4.

other towns also flourished and these formed the capitals of the local chieftains who were either under the direct suzerainty of the mighty emperor or were at times quite independent. Mudagiri or Mudagagiri and Odantapuri are notable examples which were towns of this category. Gaya is also an ancient city but there occurs no record to show that it formed the capital on some occasion; from the various historical sources, however, it appears that before the conquest of the region by Vasu, an eminent King Gaya³² was reigning in the present Gaya district and from this it is probable that the city of Gaya might be his capital. In North Bihar Plain too, a number of towns other than Vaisali and Mithila (Janakpur in Nepal) probably flourished as the seats of various clans of the united Vrijji kingdom. Although their original names are not available, the heaps of ruins, their sites, and nature and the accounts specially of the Chinese travellers, indicate that the probable capitals were Kesariya, Mandangarh,³³ Simraon (in Nepal) and Jivatpokhar (Purnea).³⁴

³⁴
Mudagiri or Mudagagiri is identified with Mongir of Alberuni's account i.e. present Monghyr (Lat. 25° 23' N and Long. 86° 27' 45" E). It is situated at a place where Hiraniya-³⁵ Parvata (Kharagpur hills) approaches the southern Bank of the

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32. Diwaker, R.R. - Bihar Through the Ages - (Calcutta 1958) page 92
33. Cunningham, A - Ancient Geography of India, (Cal. 1924) page 513;
Cunningham, A - Report of a tour in Bihar & Bengal, A.S.I. Report, 1879-80, Vol. 15, (Cal. 1882) page 18.
34. So named after Muni Mudgala residing in the nearby hills
Cunningham, A - Report of a tour in Bihar & Bengal, A.S.I. Report 1879-80, Vol. 15 (Cal. 1882) page 18.
35. Called so by Hsuen Tsiang.

Ganga which almost abuts upon the river and forces it to make a sudden bend to the north. Mudagagiri located at this place of ³⁶ 'Uttar bahini' is esteemed peculiarly holy. From Mahabharata we learn that Bhim during his conquest in Eastern India, after defeating Karna, king of Anga, fought a battle at Mudagiri and killed its local chief. Later on Chandra Gupta laid the foundation of new town after whom it was called Guptagarh, the ruins of which still lie about 5 Kms. (3 miles) south of the present fort. The location of this city along the Rajagriha and Champa highway and its strategic rocky location along the Ganga induced the Pala rulers to make it as their important military headquarters and indeed it was the site of the royal camp of the Pala king in the 10th century A.D. and inscriptions are still in existence issued from Mugagiri, as the place was then called which record the ³⁷ fact that a bridge of boats was built here across the Ganga.

Odantauri or Dandpura (identified as modernⁿ Biharsharif (Lat. 25° 11' N and Long. 85° 31' E) was located along the Rajagriha-Pataliputra royal highway. It was about 20 kilometres (14 miles) north of Rajagriha (about 11½ Km. or 7 miles north of Nalanda) and about 93 Kms. or 58 miles south-east of Pataliputra (Patna). An inscription mentions Udantapura Desa as the name Udantapura or Udanpura or Dandpura not only of a city but of a region. The place does not appear to have assumed much importance until the 7th century A.D. as Hsuen Tsiang does not mention any thing

36. Cunningham, A - Report of a tour in Bihar & Bengal, A.S.I. Report 1879-80, Vol. 15 (Cal. 1882) page 20.

37. O'malley, L.S.S. - B.O.D.G. 'Konghyr' (Patna 1924) page 232.

significant about it, but it was certainly an important place during the Guptas. The stone pillar 4.2 metre (14 ft. high) bears two inscriptions, the upper of Kumar Gupta (413-455 A.D.) and the lower of Skanda Gupta (455-480 A.D.). After the death of Harsha when each small potentate was carving out an independent kingdom on account of the decline of central power of Magadh, a chieftain named Gopala (the founder of Pala dynasty) became ruler of an independent kingdom of Bengal early in the 8th century and made his capital at Odantapuri in 740 A.D. and built the great Buddhist monastery of Odan-apura in the town. The city was located along the bank of Panchana nadi. The site is now marked by heaps of bricks and remains of several Buddhist building and lies a mile to the southwest of the present fort.

38

Kesariya is also an ancient town which was rather deserted when Hiuen Tsiang visited it. At a distance of about 50 kilometres north-west of Vaishali along the Gandak, it was the seat of Raja Vena Chakravarti. The stupa there commemorates the fact that Buddha himself ruled the region as Chakravarti Raja.

Lauriya Nandangarh or Alakappa was a city inhabited probably by Balayasa Balukas, one of the eight clans of Vrijjis. It is situated at a distance of about 24 kilometres (15 miles) to the northwest of Bettiah town and 16 kilometres (10 miles) northeast of the Gandak river. There is still a ruined fort being the king's own residence about 24 metres (80 ft) in height while the three rows of conical mounds of earth - two rows

lying from north to south and the third from east to west, were
39
probably the fortified dwellings of the ministers and nobles of
Raja Uttanpat.

Centres of Religious Associations

If the ruins of the old forts and capital cities speak
of the political significance and the imperial grandeur of the
great kingdom and the mighty rulers, the ~~whaityas~~ or temples,
stone pillars, stupas, and monasteries either preserved still in
some form or found in ruins, speak well of the glorious past,
when this plain of Bihar was dotted with many a cultural and
educational centre of even world importance. (Fig.22) Bihar Plain
was then the scene of the life and work of the founders of two
40 41
great religions of the world — Gautama Buddha and Lord Mahavira.

Jainism contributed towards the great cultural set-up
42
of ancient Bihar. Vardhaman, later on known as Mahavira, the
founder of Jainism was a son of Bihar. His birth place was
Kundrapura (Basu Kund, 2 miles north of Basarh in Muzaffarpur
district) a suburb of Vaisali. He was born in 599 B.C. Lord
Mahavira visited a number of places; chief among which are
Nalanda, Rajgriha, Champa and Vaisali. He attained supreme
enlightenment at the age of 43, in the 13th year of his

39. Cunningham, A - Ancient Geography of India,
(Calcutta 1924), page 514-15.

40. Sakya Sinha later on called Buddha was the son of Maya
Devi; his father was king Sudhodhana. He was married to
Yasodhra who gave birth to a son Rahula. — Lal, R.B. —
Buddhist monuments (Patna 1956) page 1.

41. Vardhaman later on called Mahavira, was the son of King
Siddhartha of Kundrapura.

42. Mishra, Y. — Vaisali, the birthplace of Lord Mahavira —
Homage to Vaisali edited by Mathur & Y. Mishra
(Muzaffarpur 1948) page 85.

renunciation. This took place under a Sal tree in the field near village Jrimbhikagrama, which is now known as Jambhigram near the Damodar in Hazaribagh district. He finally attained nirvana (salvation of soul) at Apapapuri (Pawa) seven miles to the south⁴³ of Odantapuri (Biharsharif) in 527 B.C. Out of the 24 Tirthankaras the first, Rishbha Deva and 22nd, Neminutha, died outside Bihar at Kailasa and Girnasa respectively. From second to twenty first, all of these twenty Tirthankaras attained salvation at Sammenda Sikhara (Parasnath Hill of Hazaribagh district). The last two Vasupuja and Mahavira (the 24th Tirthankara) attained nirvana at Champa and Pawa respectively.

Although Bihar cannot claim to have places where Buddha⁴⁴ was born in 566 B.C. (Lumbini garden near Kapilvastu, Nepal), where he set in motion the wheel of the Law (the Dharmachakra) and preached his first sermon (Deer Park at Sarnath), 7 miles north of Varanasi, where he passed away into Mahaparinirvana at the age of 80⁴⁵ (Kusinagara, 1½ miles north of Kasia in Gorakhpur district in U.P.), it certainly possesses the great place where Buddha, attained supreme spiritual illumination under the Pipala or fig tree, now called 'Bodhi Tree' near the village of Uruvela (Bodh Gaya) on the southern outskirts of Gaya city on the left bank of the Phalgu (Lilajan or Niranjan)⁴⁶ river in 489 B.C.

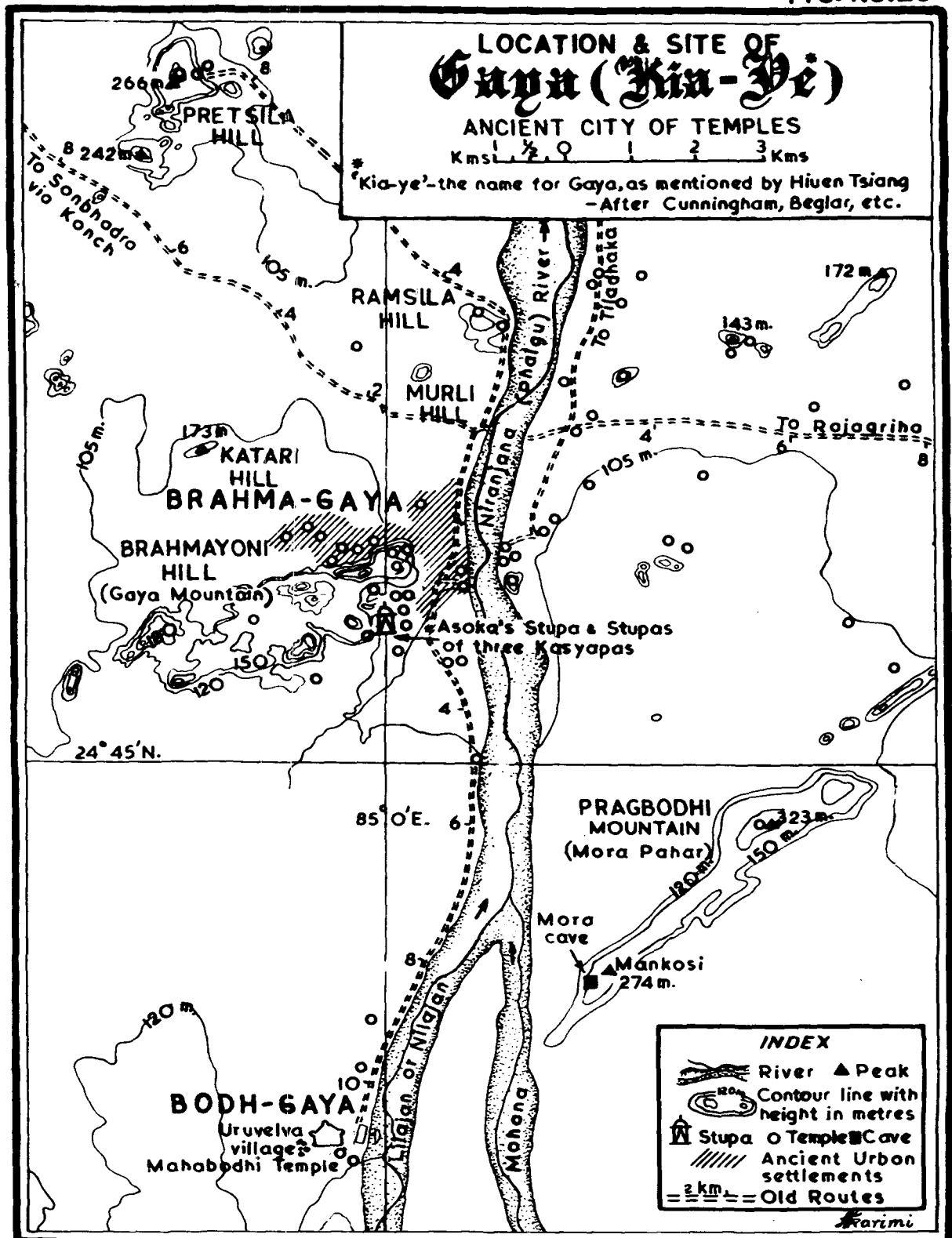
43. Jain Divinity (a perfect soul. 24 such Tirthankaras were there for the Jains. Lord Mahavira was the 24th or the last Tirthankar.

44. According to one the date of birth is said to be 566 B.C., while according to another it is 644 B.C.- Lal, R.B.- Buddhist Monuments (Patna 1956), Page 1.

45. Lal, R.B.- Buddhist Monuments- (Patna, 1956) page 2.

46. Lal, R.B.- Bodh Gaya - (Patna 1956) page 1.

FIG. NO.25



SOURCE :- THIS MAP IS PREPARED ON THE BASIS OF CUNNINGHAM, BEGLAR, ETC.'S A.S.I. REPORTS & OTHER HISTORICAL ACCOUNTS; S.I. SHEETS 72 0/13 & 14, 72 4/1 & 2 WERE ALSO CONSULTED.

Sacred Towns -

Bodh Gaya with its Mahabodhi tree and the temple and many other monuments forms the most sacred centre of attraction in Bihar for Buddhists. But equally important and sacred as these seats are Rajagriha and Vaisali which are the places of miracle deeds of Buddha. Pawa and Champa are sacred to Jains; while Gaya, Vedagrabha (Buxar) and Mahasara (Masar) are undoubtedly sacred places for Brahmans.

Gaya (Lat. $24^{\circ} 49'$ N, Long. $85^{\circ} 1'$ E) is located at a distance of about 92 kilometres (57 miles) to the south of Pataliputra (Patna) along the western bank of the river Phalgu. It can be regarded as one of the most famous places of both Brahmanical as well as Buddhist worship in North India. Many of the houses are situated on rocky points at the foot of the isolated hills, specially the hill of Brahman-yoni (Fig.25). The place was a stronghold of Brahmans, even before Buddha. Hiuen Tsiang found the city 'Kia Ye' (Gaya) to be a thriving Hindu town well-defended and difficult to access and occupied by a thousand families of Brahmans, all descendent of a single rishi.

Bodh Gaya (Lat. $24^{\circ} 41' 30''$ N, Long. $84^{\circ} 59' 45''$) lies 11 kilometres (7 miles) to the south of Gaya proper or about 100 Kms. (62 miles) to the south of Pataliputra (Patna) and is situated on the same side of the Nilajan (Phalgu) river as Gaya.

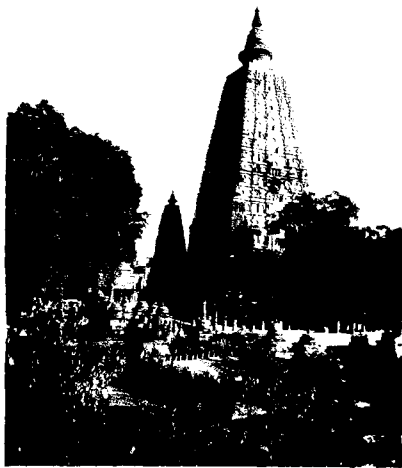
47. Cunningham, A - Ancient Geog. of India edited by Majumdar Shastri (Calcutta, 1924), page 522.



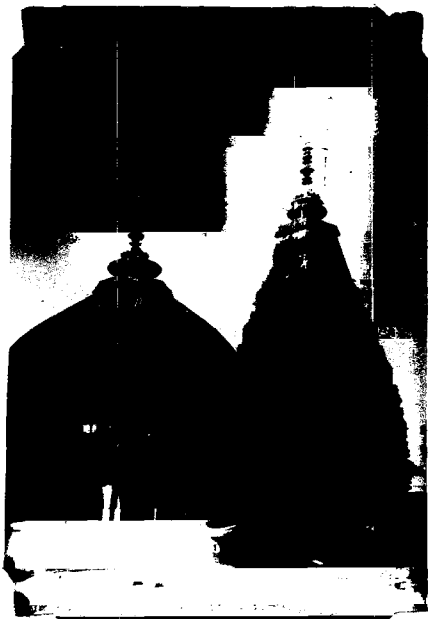
No. 6
Mahabodhi Temple Bodh Gaya



No. 7
Vishnupad Temple, Gaya City



No. 6
Mahabodhi Temple Bodh Gaya



No. 7
Vishnupad Temple, Gaya City

If Gaya is considered as Brahmanical Gaya, ^Uruvilwa (Urul village) was Bodh Gaya, the centre of attraction of the Buddhist world. Here stands the famous Pipala (Fig.26) tree of wisdom under which Sakya Sinha sat for 6 years in meditation until he attained supreme state of Buddha by which name he was afterwards known. Close to the east of the holy pipala tree (Bodhi tree as it was later on known) stands the Maha Bodhi temple which is 14.6 metres (48 ft) square in a terrace level of the tree with a height of 48.8 metres ⁴⁸ (160 ft) above the granite pavement of the lower apartment. Asoka in the later years surrounded it with a sandstone wall (obtained from the Kaimur range) of 3.6 metres (12 ft) high and built a small temple, which was afterwards replaced by a bigger temple by a Brahman, devotee of Siva while the younger brother of the Brahman excavated the sacred Buddhapokhar (tank) to the south ⁴⁹ of the temple.

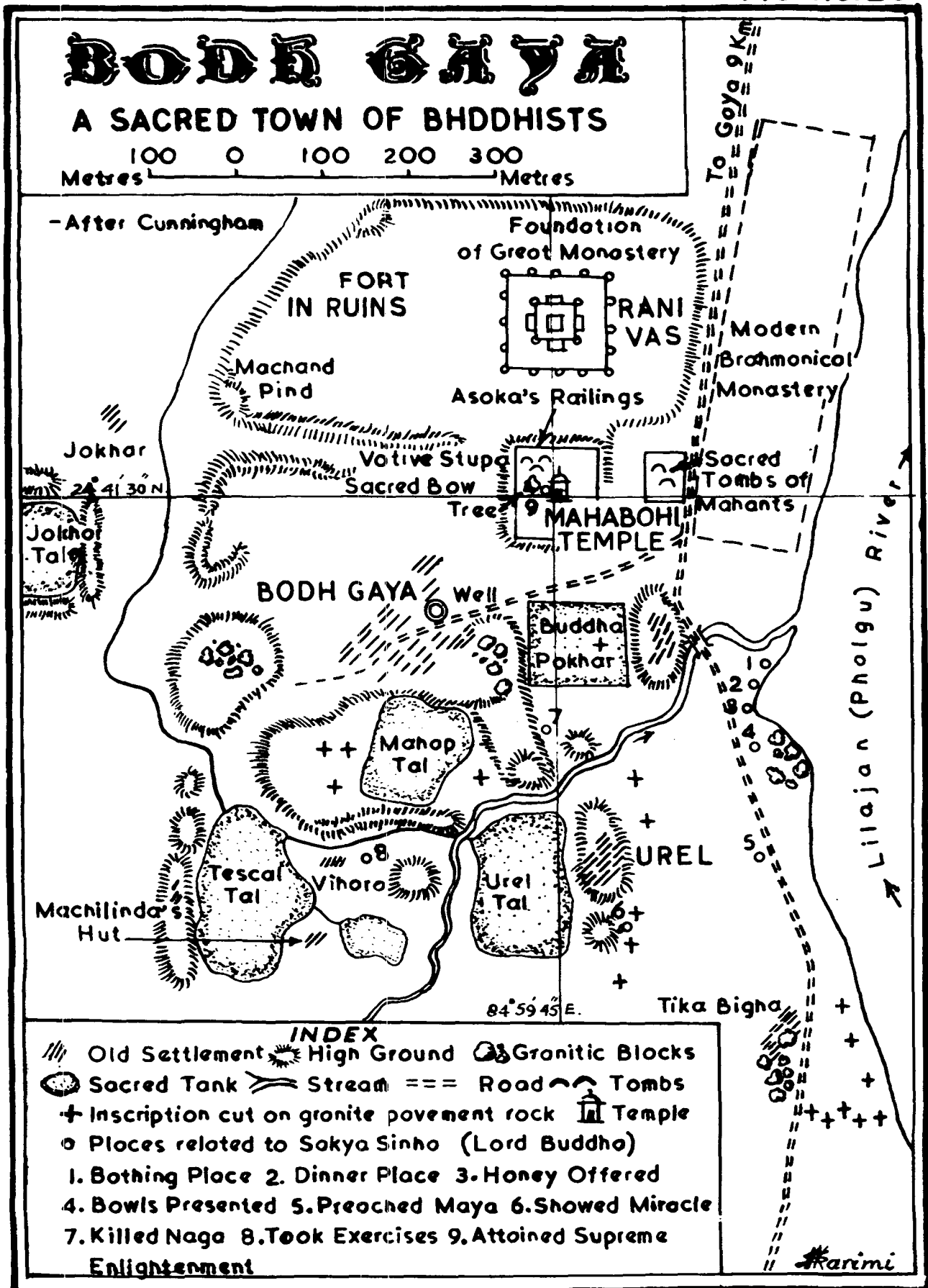
During the reign of Samundra Gupta who had maintained friendly relationship with neighbouring foreign countries, Meghavarna, the king of Ceylon (304-330 A.D.) built a costly edifice of Mahabodhi Sanghama for the Ceylonese monks and pilgrims. It has six halls with towers of observation (temple towers) of three storeys and was situated just to the north of the great 'Mahabodhi temple'. By the time Hiuen Tsiang visited Bodh Gaya, this Vihara had developed into a magnificent ⁵⁰ establishment and the number of priests was more than 1,000.

48. Cunningham measured this height with the help of a theodolite and this coincides very exactly with the Pilgrim's estimate-Cunningham, A.-A.S.I. Report 1875-76, Vol. XI (Cal. 1880) page 148

49. Ibid, page 147

50. Dutta, K.K.- An introduction to Bihar- Indian History Congress (Patna 1946), page 75.

FIG. NO.26



But the temple which in later years having become ruinous was probably replaced and rebuilt by the Burmese in or about 1305-1306 as shown in the woodcut No.982.⁵¹

The main attractions of this sacred city of the Buddhist world lay in its Mahabodhi temple, the holy tree and the Vihara that lies to the north of it. But apart from these there are a number of other holy sites which are all associated with the life and miracles of Buddha. A tank other than the Brahma's tank, was created by Indra to meet Sakya's wish for a bath after his 6 years meditation under the Bodhi tree. This^{is} now marked by the 'Mahap Tal'. To the west of this tank lies a huge stone brought by Indra where Sakya wished to dry his clothes after bathing. To the east of Indira's tank and in the middle of the wood was the tank of the Naga King Machilinda. This is identified as Teskar or Taksal tal. Besides these are a number of other important sites along the bank of the Lilajan (Phalgu) river (Fig.26).

Pawa or Anapapuri (Lat.25° 5' 30" N, Long 85° 32' 30" E) is located on the ancient Pataliputra-Girak route, about 7 miles to the south of Odantapuri (Bihar). Pawa is sacred to Jains as Mahavira, who was born at Kundrapura near Vaisali in 599 B.C., breathed his last here in 488 B.C. As a place of cremation where Mahavira, the last of the twenty four Tirthankaras was buried, Pawa is considered as one of the most esteemed places of Jains in northern India.

51. Mr.Fergusson & Cunningham fully agree with this idea.
Cunningham, A.- A.S.I.Report 1871-72, Vol.3 (Calcutta 1873)
pages 91-92.

The political cities like Champa, Rajagriha, Pataliputra and Vaisali were also deeply associated with the religious activities of both Jainism and Buddhism. Champa identified as Champanagar in the western suburb of present Bhagalpur city was the place where Vasupuja the twenty third Tirthankara of the Jains attained his nirvana. Overlooking the old bed of the river Champa, the temple located at this place is still visited by the followers of this dharma. Rajagriha was studded with innumerable Jain temples and contained other important Jain monuments of the 3rd and 4th century A.D. specially on the Vaibhara hill, while on the hill top of Gridhkuta (Vulture's peak) Buddha spent many months in meditation. As mentioned Vaisali was a town of religious importance for Buddhists and Jains. ⁵² Vedagrabha or Baghear (Buxar) was situated on the southern high bluff bank of the Ganga. It was considered to be one of the holiest Brahmanical site in the whole plain.

Mahasara (Masar) or 'Mo ho so Lo' of Hiuen Tsiang was another important Brahmanical site like Gaya and an important town about 10 kilometres to the west of Arrah and was not far from the south bank of the Ganga river. The town extended for about half a kilometre in length from east to west and for about a quarter in width, so that the present mounds indicating ruins at Kundwa or near Dibhi near Ganginadi testify to the extent of the old town. Its population then was about 20,000. Aramngara or Chakrapur near the village Bakri (Pukree) now identified as

52. Cunningham, A.- A.S.I. Report 1871-72, Vol. 3, (Calcutta 1873) page 65.

53. Ibid, page 66

Arrah with its Asokan pillar (as spoken by Hiuen Tsiang) to
54
commemorate the success over the powerful Asura named Bakri, was
an important Brahmanical town.

Monastic and Monumental places :

Apart from the sacred towns there are a lot of other places which are associated with Buddhist monuments such as rock cut caves, imposing stupas, edict pillars, chaityas or shrines (temples) and viharas (monasteries) that all tell a story of their own. It is said that Asoka built 84,000 stupas and chaityas throughout India.

These caves, stupas, stone pillars, chaityas etc. all associated with the great historical philosophical thoughts and religion as mentioned above have partly added to the glory of old capitals and the important sacred towns on the one hand and partly have also been responsible for the growth of a number of smaller towns (Nigama) and sacred villages (grama).

University towns

If the Mauryan period was the age of the construction of temples, chaityas, stone pillars and caves, Gupta and Pala period can well be regarded as the age of 'MONASTERIES' or Sangharama or Vihara. These were supposed to be the seats of

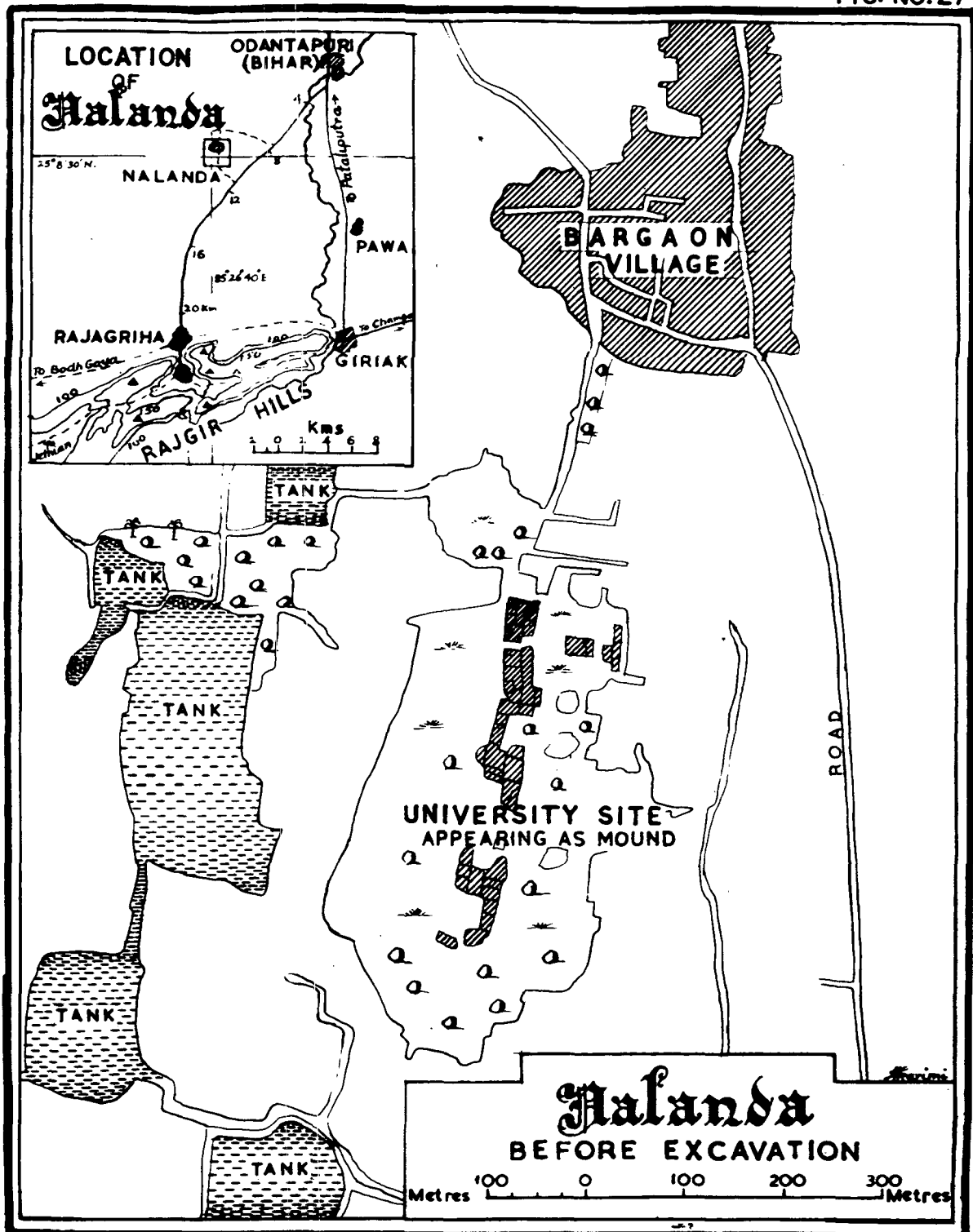
54. The old name of Arrah was Eka-Chakra or Chakrapur. Close by it stood the village of Bakri (now known as Pukree) where was the Bakra Asura who lived on human flesh. Buddha or Rama is said to have killed this demon, on Tuesday (Ara) the name of Chakrapur was since then changed to 'Ara' or Arammagar and is now called Arrah. The complete story appears in Mahabharata. At Hiuen Tsiang time it was one of the time honoured legends. - Cunningham, A. - A. S. I. Report, Vol. 3 (Calcutta, 1873) page 73.

philosophic thoughts, preaching and learning — something like a college or university. Several new monasteries were constructed throughout Bihar and most of these developed into big educational institutions. In fact the entire distance from Odantapur (Bihar-sharif) to Bodh Gaya was covered with monasteries at least one at every 10 Kms. In the reign of Samudra Gupta, Megha Varma king of Ceylon built a monastery in Bodh Gaya, which at the time of Hiuen Tsiang's visit consisted of six halls containing one thousand monks. The monastery at Pataliputra similarly contained about 600 monks who were taught Sanskrit grammar at the beginning of their education and their monastic life. Fa Hian is said to have spent three years time at Pataliputra in studying Sanskrit. Nalanda where thousands of students lived and studied, flourished as the greatest monastic city during the Guptas. Hiuen Tsiang became the disciple of Silabhadra, the abbot of Nalanda. Towards the end of the Gupta period Baladitya built a monastery in Nalanda. Hiuen Tsiang had stayed in this college of Baladitya.

During the Pala period, Gopala founded the famous Odantapuri Vihara at a place where Nalanda College stands in Biharsharif today. It was during the days of Devapala that⁵⁵ king of Ceylon built another monastery at Nalanda. It was again during the times of Pala kings that Vikramasila came to share the glory of Nalanda and soon developed into an international centre. Dipankara Atisa was the renowned professor of ancient Mahasangharama (University) which was founded by Dharmapala at a site a few miles from Golgong at Patharghatta.

55. Divakar, R.R.- Bihar through the Ages, (Cal.1958), page 313.

FIG. NO.27



SOURCE :- THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL AND GEOGRAPHICAL FACTS;
S.I. SHEET 72 6/8 (1"=1 MILE) & VILLAGE MAPS (10"=1 MILE) WERE ALSO CONSULTED.

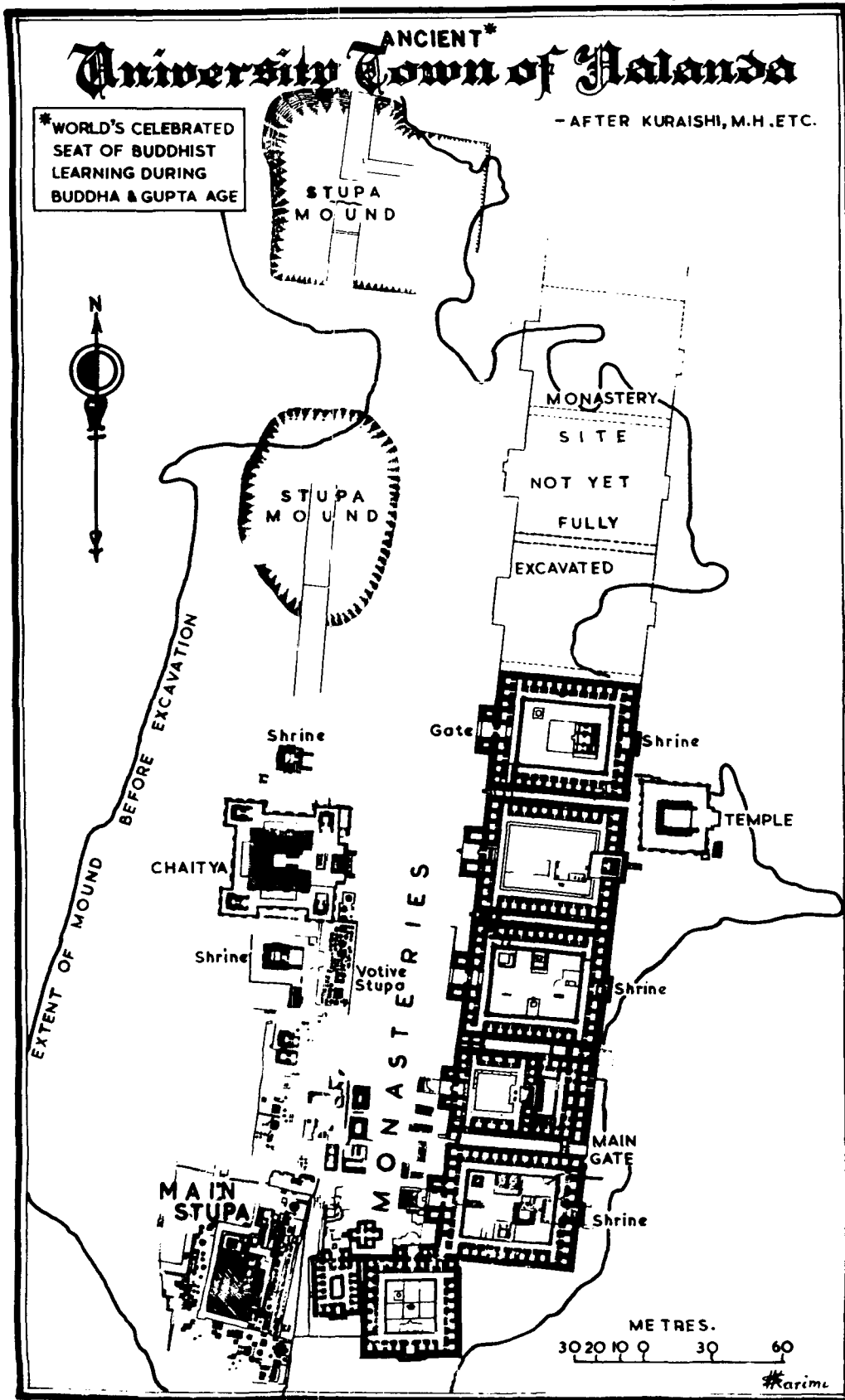
The construction of these monasteries in Bihar gave it a new life throughout, so that a number of University towns like Nalanda, Vikramashila, Odantapuri, etc. sprang up which were considered as great centres of learning in the world.

Nalanda (Lat 25° 8' 30" N Long. 85° 26' 40" E) the site of the most magnificent monasteries of Magadh and the celebrated seat of Buddhist learning in the world, is situated 11 kilometres (7 miles) north of Rajagriha and about the same distance from Odantapuri (Biharsharif). It is today connected with modern Patna the capital of the State, 88 kilometres (55 miles) away by a first class macadamised road, where Rajya Transport buses ply at regular intervals. This famous university town of the ancient days of Buddha and the Gupta kings is situated and represented today by the melancholy tanks and numerous massive brick ruins as mounds (partly excavated by the Archaeological Survey Department of India) extending north to south along the outskirts of the village known as Bargaon⁵⁶ and covering a space of about 600 metres by 200 metres⁵⁷ (Fig.27). The very name of 'Nalanda' means the 'giver of lotus' and even to this day, Nalanda is surrounded by long stretching of lakes full of beautiful lotus.

56. Fa Hian mentions a village Na-Lo about a yojna (10 kms) to the south west of modern Biharsharif. Cunningham and Broadley (a Deputy Magistrate of Bihar) identified it with Bargaon. Mr. Hunter also states that there can be no doubt about it-Hunter, W.W.-S.A.B. Vol.11 (London 1877) page 78.

57. Kuraishi, H.H.- A short guide to the Buddhist remains at Nalanda (Calcutta 1931) page 1.

FIG. NO.28



As regards its extent and the various sections it can be said that the university campus probably covered an area of at least 1.6 Km. or one mile long from south to north and 0.8 Km. or half a mile from west to east and the whole establishment from without was surrounded by a brickwall which resembled a fort. Today the ruins include a zone of stupas and temples. The main stupa stands surrounded in a court by a large number of smaller votive stupas many of which are built one over the other on the same spot, sometimes twice or thrice. The present building⁵⁸ being the result of seven such enlargements and contains no less than 7 stupas one upon another. It is 10 metres (33 ft) high and about 21.3 metres (70 ft) thick at the top and marks the place where Buddha dwelt for three months explaining the law of the gods. A hundred yards east of the stupa mounds and running parallel to them is a maize of monasteries (viharas) (Fig. 28). Eleven of these have already been exposed by the Archaeological Department. The main monastery measures 62 metres by 46 metres (205 ft. by 168 ft) and the wall is about 2 metres (6 to 7 ft)⁵⁹ thick. Talking about this main college Hiuen Tsiang states "One gate opens into the great college from which are separated eight other halls standing in the middle of Sangharama. This⁶⁰ is the most remarkable for grandeur and height". The other monastic establishments confirm a common type. Somewhat like a hostel, these form a rectangle in plan bounded by an outer

58. Iall, R.B.- Buddhist Monuments (Patna 1956) page 20.

59. Kuraishi, M.H.- A guide to Buddhist ruins excavated at Nalanda (Calcutta, 1931) page 1.

60. J. B. O. R. S., Vol. 9 (Patna 1923) Page 6.



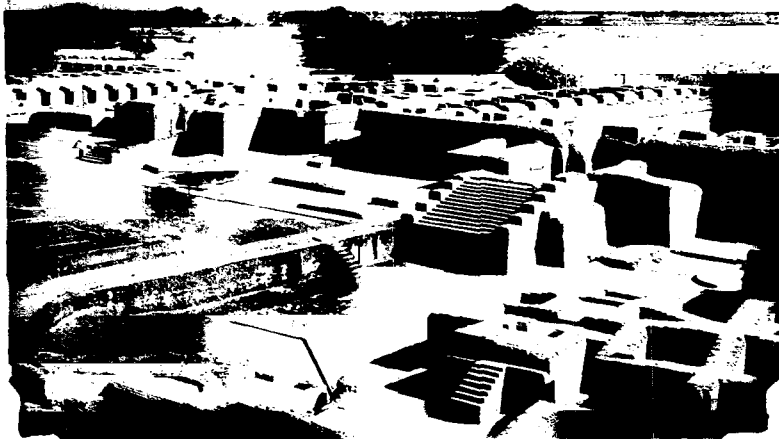
No. 8

The ruins at Nalanda - the exposed view represents only a part of the once flourishing town.



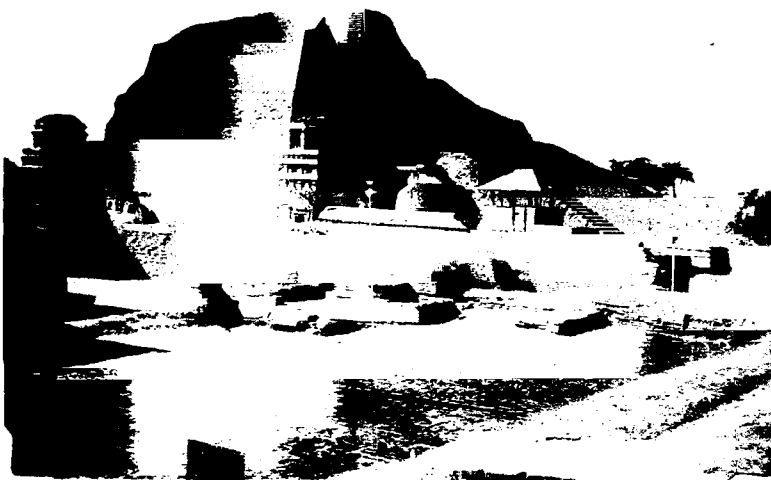
No. 9

Main stupa, at the celebrated University town of Nalanda.



No. 8

The ruins at Nalanda - the exposed view represents only a part of the once flourishing town.



No. 9

Main stupa, at the celebrated University town of Nalanda.

range of cells or cubicles with an open verandah running round their inner-face and enclosing a large quadrangle court which usually contains a well among other features. Detatched mounds further afield mark the sites of temples while individual sculptures scattered all over the site testify to high pagodas and towers that were once splendours of the area.

With respect to the functions of the University and its status it can be without doubt considered as the 'Oxford of Buddhist India' and was a centre from which Buddhist philosophy and teaching were diffused over south-eastern Asia.

⁶¹
It was the home of 10,000 monks renowned for their learning who spent their lives in the pursuit of wisdom. Nalanda was a university confined to postgraduate study and was a centre of Research like the present institute of Science at Bangalore in Mysore state.⁶² Scholars from all parts of India and from distant foreign countries like Tibet, China, Mongolia, Korea, Japan and Ceylon sought admission to this University. Notable among the foreign scholars were the two chinese scholars, Hiuen Tsiang and I-Tsing both of whom have left first hand accounts of the working of the University. The two Korean scholars who got admission and died at Nalanda were Arya Varma (admitted in 630 A.D.) and Hwai-Yieh. The subjects taught included Grammar Logic, literature, astronomy and medicine etc. It was the largest

61. The priests belonging to the convent or strangers (residing therein) always reach the number of 10,000 (Hiuen Tsiang 637 A.D.)-J.B.O.R. March 1923, page 6

62. Iall, R. B. - 'Nalanda' (Patna 1955) page 4.

residential university which India has even known. It had a splendid library which was made up of three huge buildings namely Ratansagar, Ratanodadhi and Ratnaranjaka. Ratnasagar was a nine storied building in which were conserved the collection of sacred works.

The decay of Nalanda is generally, though wrongly, ascribed to its sacking by the Muslims in late 12th Century A.D. but there is no direct evidence to prove that the city was destroyed by them.⁶³ The reasons which contributed towards the decay of the mighty city may be summed up as follows :- After the Guptas there was a complete loss of the imperial grace. Palas patronised their own establishments either at Odantapuri (Dand Bihar) or at Vikramashila (Patharghata). The university therefore decayed gradually owing to lack of adequate support from the State. According to Dharmaswami, at a time when Muslims had captured Odantapuri in 1197, Rahula Sri Bhadra, the chief abbot⁶⁴ then of Nalanda had only 70 students under him as against 10,000 in the days of the Guptas. The other reason was its internal decay caused by the numerous schism that divided the Buddhist cult. From the end of the 7th Century Buddhism was on its downward march. Hindu revival too gave a blow to both Jainism and Buddhism resulting in their decline in Bihar. Just at this moment when moral degradation had taken its root into the system there came the terrible philosophical onslaught.

63. Sankalia, H.D., University of Nalanda, (Madras 1954) page 212.

64. Divakar, R.R.- Bihar through the Ages, (Calcutta 1958) page 341.

Kumaraill in the 8th Century and Sankara in the 9th Century attacked and demolished the gigantic and at one time impregnable edifices of Buddhism. Buddhism was thus hemmed in from all sides, political moral philosophical to exterminate it. Nalanda was thus bound to decay after the 7th century. The foreign invasions and political disorder immediately after the death of Harsha can also be regarded as yet another factor towards its decay. The country's local chieftains were themselves engaged in their own supremacy at various sectors, while the area was over-run by Huns etc. There was a great devastation specially in northern Bihar and its effect to south directly or indirectly cannot be totally neglected. This is also important to note that Nalanda like Odantapuri and Vikramasila has a big surrounding wall which⁶⁵ could give it the appearance of a fortress. It appears also from historical facts that the break up of the political unity in this part of India (South Bihar) specially after the death of Devapala, induced the Rashtrakutas etc. to raid the north-eastern provinces (866 A.D.). During the days of such internal crisis between the 8th and 11th Century A.D. i.e. after the Palas many of the early raiders even prior to Muslims might have mistook this place for a fort. This will explain the disintegration of the political unity on the one hand and the decay of some of the cities along the base of the Jharkhand table-land including Nalanda on the other.

65. Sankali, H.D. - University of Nalanda (Madras 1954)
page 212.

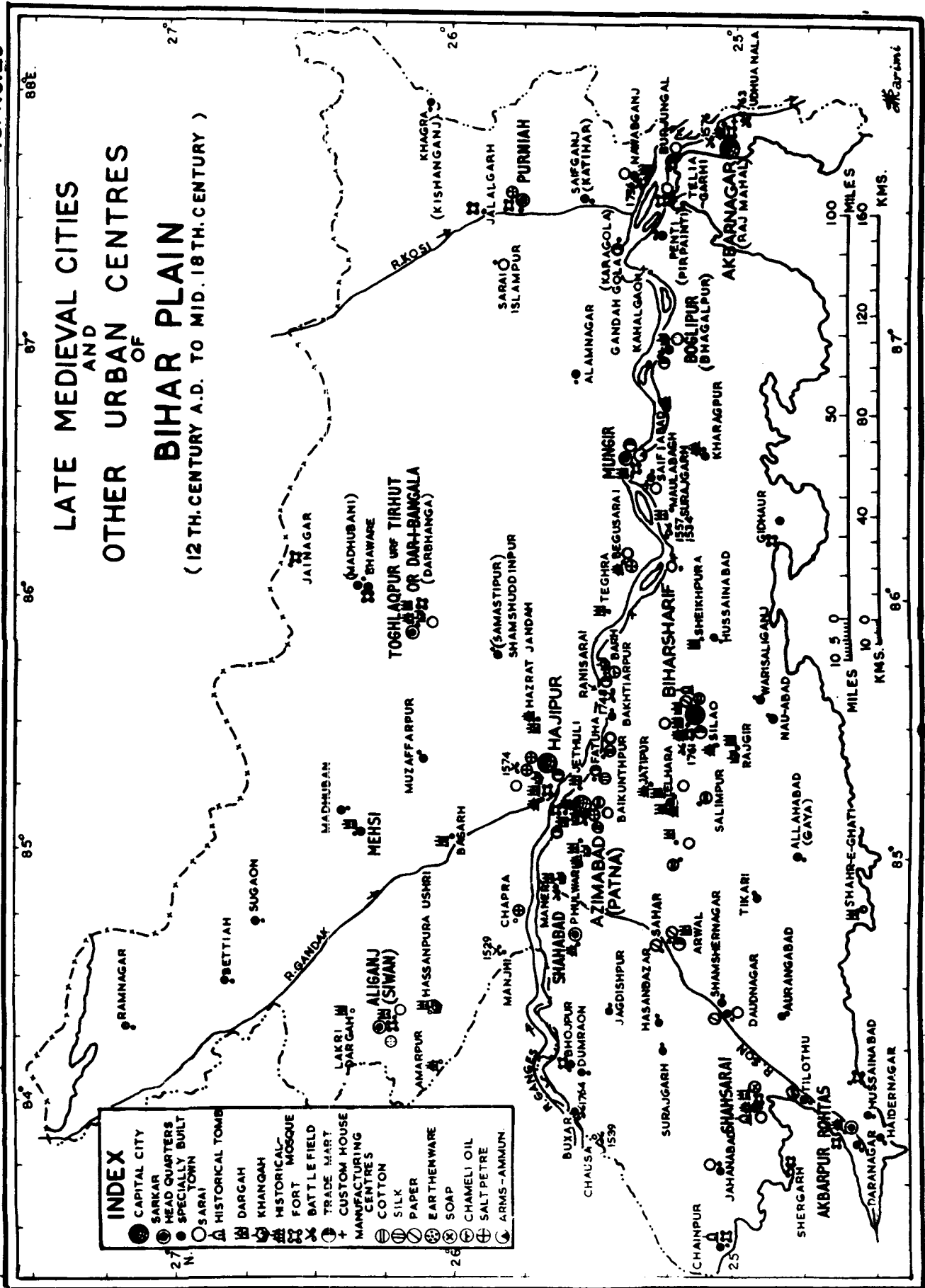
TOWNS THAT APPEAR TO HAVE GROWN DURING
LATE MEDIEVAL OR MUSLIM PERIOD
(12th Century A.D. to Mid-18th Century A.D.)

At a time when the Muslims were establishing their strongholds in Bihar, the imperial cities like Polibothra or Pataliputra, Rajagriha or Kusagrapura, Vaisali and Champa all lay in ruins or were surviving only as staggering small towns either as the seat of some local chieftain or as minor commercial centres. Most of the Buddhist monumental or monastic towns had also lost their urban outlook.

Growth of towns under Political influence -

Garrison Towns - The late medieval urban growth is mainly the result of outside influence. In the political supremacy of the region specially during the early Muslim period, Bihar Plain was very often dependent upon Delhi Sultanates or the Sharqui rulers of Jaunpur or was partly or wholly associated sometimes with the Ilyas Shahi kingdom of Bengal. The external influence for political supremacy and the internal repulses by the local chieftains gave birth to a number of garrison or fortsite towns mostly along the Ganga. The forts at the strategic points either by the advancing Muslim Sultans and the Mughals on the one hand or the local Pathans and other chieftains on the other, were built specially to hold their territory which in course of time formed the nuclei of future towns. Buxar, Hajipur, Patna, Monghyr, Bhagalpur, Teliagarhi and Rajmahal were thus the natural growth which were towns of garrison

FIG. NO.29



SOURCE:-THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL & GEOGRAPHICAL ACCOUNTS.

character (Fig.29). Shahsaram near the Son re-entrant was the training ground of Sher Shah as he governed the parganas of Sasaram and Khwaspur. Patna was fortified in 1541 by Sher Shah. Standing on the bank of the Ganga Sher Shah in 1541 is said to have remarked to his associates :-

" If a fort were to be built at this place the water of the Ganga would never flow far from it and Pattana would become one of the great towns of this country."

This fort was later on repaired by Daud Khan, the last independent king of Bengal in 1574 when Akbar attacked it. Prince Azim-us-Shan later on thoroughly renovated it. Similarly the Pathans constructed masonry walls and ditch at Monghyr. Prince Daniyal of Bengal a contemporary of Sikandar Lodi in 1497 repaired the rampart of the fort; while Shah Shuja too is said to have repaired it, fixed towers at every 30 metres and joined the ditch with the river. All these garrison towns have thus seen the march of advancing or retreating armies or were very often the scenes of important struggles. They often formed the base of operation for the early Turks or the Mughals. Arrah commemorates the victory of Babar over western Bihar. Chausa near Buxar marks the site where Humayun was defeated by Sher Shah in June, 1539. Monghyr and Bhagalpur in the east were also

66. Dutta, K.K. - Introduction to Bihar-Indian History Congress (Patna 1946) Page 20

67. Abdullah-Tarikh-i-Daudi-Elliott's history of India, Vol. IV (London 1872) page 477.

68. Nizamuddin Ahmad - Tabqat-i-Akbari, Vol. II (Calcutta 1936) page 430.

69. Fasihuddin Bulkhi - Tarikh-i-Magadh 'Urdu' (Delhi 1944) page 267.

equally important strategic points. Talking about the place in his account about the river trip from Agra to Rajmahal during Shah Jahan, Abdul Latif of Ahmedabad states :-

" Early in the reign of Akbar, the imperial army long cantoned at Monghyr for effecting the conquest of Bengal and many battles between them and the Pathans were fought in this region."⁷⁰

Bhagalpur gained importance during second Afghan war when Han Singh, the Rajput General of Akbar made it the rendezvous of all the Bihar contingents. Apart from Monghyr and its environs⁷¹ Kahalgaon⁷² (Colgong),⁷³ Teliagarhi and Rajmahal were also important.

Administrative towns - During the days of Akbar the territory of Bihar Plain was consolidated under one rule. Most of the local rajas, etc. were subdued. A clear picture of the economics and administrative condition of the province emerged.⁷⁴ A subah was divided into sarkars and sarkars into dasturs; while again the dasturs were sub-divided into parganas or mahals, where every unit was expected to play its own role with respect to revenue or national militia. A number of administrators like Nazim, Diwan and Qazi-ul-Qazzat as head of the various departments with a host of other official like faujdars, Kotwals, and

70. J.B.O.R.S (Patna 1919) page 600.

71. Hunter, W - S.A.H. 'Bhagalpur', Vol.14 (London 1877) page 81.

72. Emperor Babar is said to have spent 4 days at Kahalgaon (Colgong) from where he marched on and halted at Garhi-Gulbadan Begam, translated by Beveridge (London 1902) page 133. ^{→ Humayun Nama}

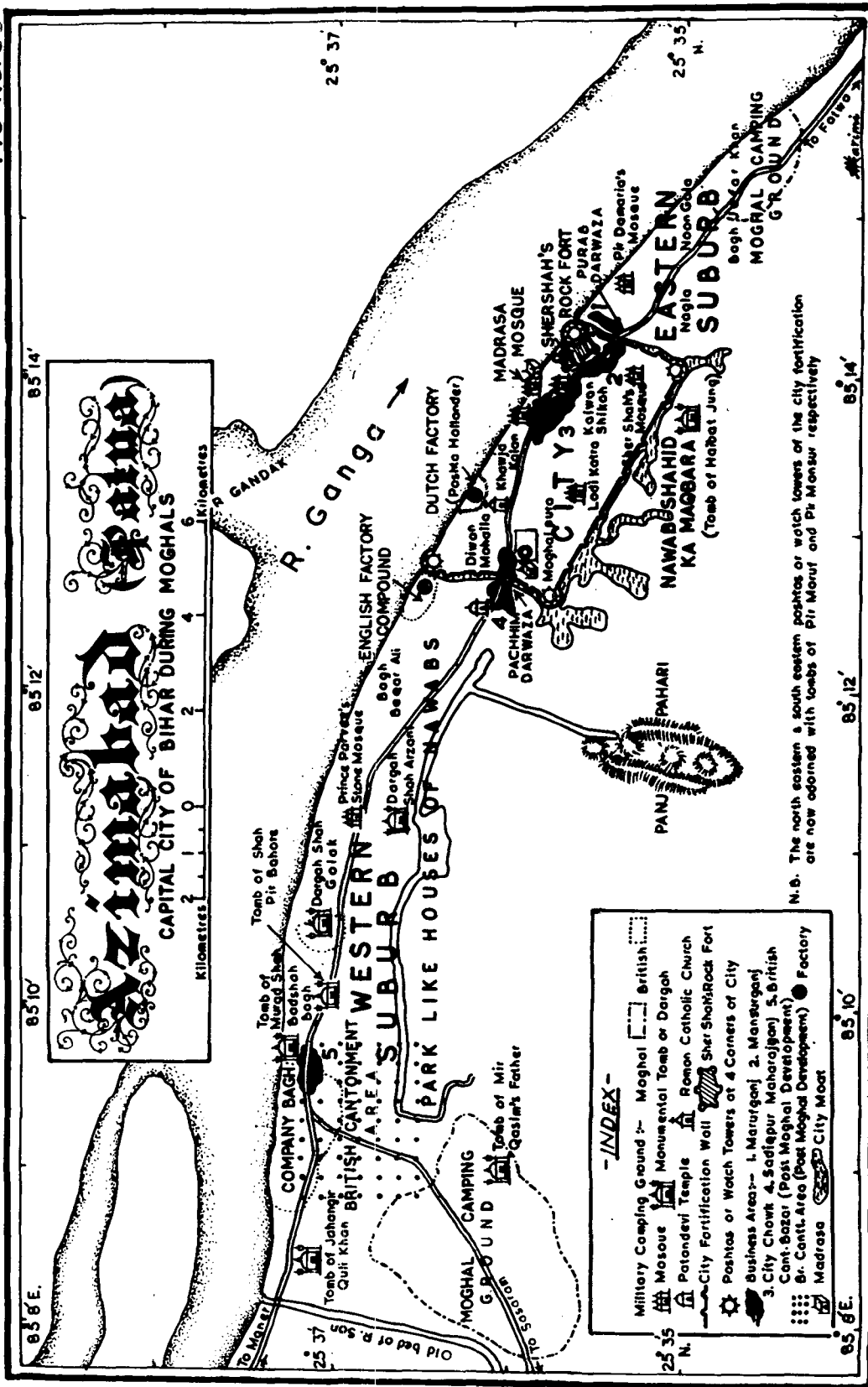
73. To check Babar, Sher Shah is said to have directed Khwas Khan 'Go and fortify Garhi' Ibid, page 133.

74. There were 7 sarkars - Bihar, Monghyr, Tirhut, Saran, Champaran, Hajipur, Rohtas and 199 parganas during Akbar (1582); During Aurangzeb (1685), the number of sarkars increased to 8 with the division of sarkar Rohtas into sarkar Rohtas and Bhojpur.

thanedars on the administrative side; amils, shiqdars, karkuns, ganungos and patwaris on revenue side and qazi, mufti, mir adls, etc. on the judicial side were also associated with each other. Such an organised administration was thus responsible for the growth of a number of administrative towns, such as the provincial capitals, sarkar or dastur (district) headquarters or the seats of some imperial officers. Patna and Akbarnagar (Rajmahal) along the Ganga, the former in west central and the latter overlooking the deltaic Bengal respectively dominated the whole urban landscape and were the principal cities of the Bihar Plain during the Muslim period. Purnea, Togaipur alias Tirhut or Dar-i-Bengal (Darbhanga) and Hajipur to the north of the Ganga, while Monghyr, Bihar, Shahabad i.e. Arrah and Rohtas in the southern plain were other major towns that grew as sarkar headquarters. Mehsi in Champaran, Telhara in Sarkar Bihar and Boglipur (Bhagalpur) in Monghyr sarkar, were other towns serving probably as dastur (district) headquarters.

Patna or Azimabad (Lat. 25° 35' 45" N; Long. 85° 14' 0" E) at the confluence of a number of important rivers and lying in the heart of the Bihar Plain was the principal city and capital of Subah-i-Bihar. It has been mentioned earlier that the credit of selecting Patna as the capital of the province during the Muslim period goes to Sher Shah who initially transferred the capital in 1541 from Bihar sharif to Patna and erected a fort at this place, the remains of the ramparts of which are still to be seen at most places. Pachchim Darwaza reminds even today, the great gate which the old city once possessed. During Jahangir's

FIG. NO. 30



SOURCE:—THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL & GEOGRAPHICAL ACCOUNTS.

time Patna was the seat of the Nazim-i-Bihar (Governor of Bihar province). Prince Parvez, Sulaiman Shikoh, Prince Azam (1677), Azim-us-Shan (1703-6) and Prince Mirza Ahmad (later called Alamgir II) with the exception of the last one, held their royal darbars at Patna. The present Palezaghat which was then called Parvezabad, across the Ganga in North Bihar opposite Patna is after Prince Parvez, the first Mughal Prince as Governor of Bihar during Jahangir. The stone mosque (Pathar-ki-masjid) at Patna east of present Sultanganj mohalla along the road lay to the west of the city and was constructed in 1626. Prince Azim-us-Shan the grandson of Emperor Aurangzeb gave Patna a new name - 'Azimabad'. He made extensive repair to Patnafort and renovated it thoroughly. He tried to make Azimabad second only to Delhi. Separate sections for various classes of people sprang up during his period such as Moghalpura, Lodikatra, Diwan Mohalla, Bakshi Mohalla etc. Close to the fort was section for princes and high officials called Kaiwan-i-Shikoh. The darbar was held at 'Bagh Mir Afzal' where now Engineering College stands (Fig.30).

75. Abdullah - Tarikh-i-Daudi - Elliot's history of India
Vol.IV (London 1872) page 477.

76. Khan, Ghulam Hussain - Sair-i-Mutackherin - Vol.II (Calcutta 1879) page 7 & 116.

Fasihuddin Balkhi - Tarikh-i-Magadh, (Delhi, 1944) page 236;
... A gold coin bearing Azimabad-
'Coin No.4360' of Lucknow Museum Catalogue

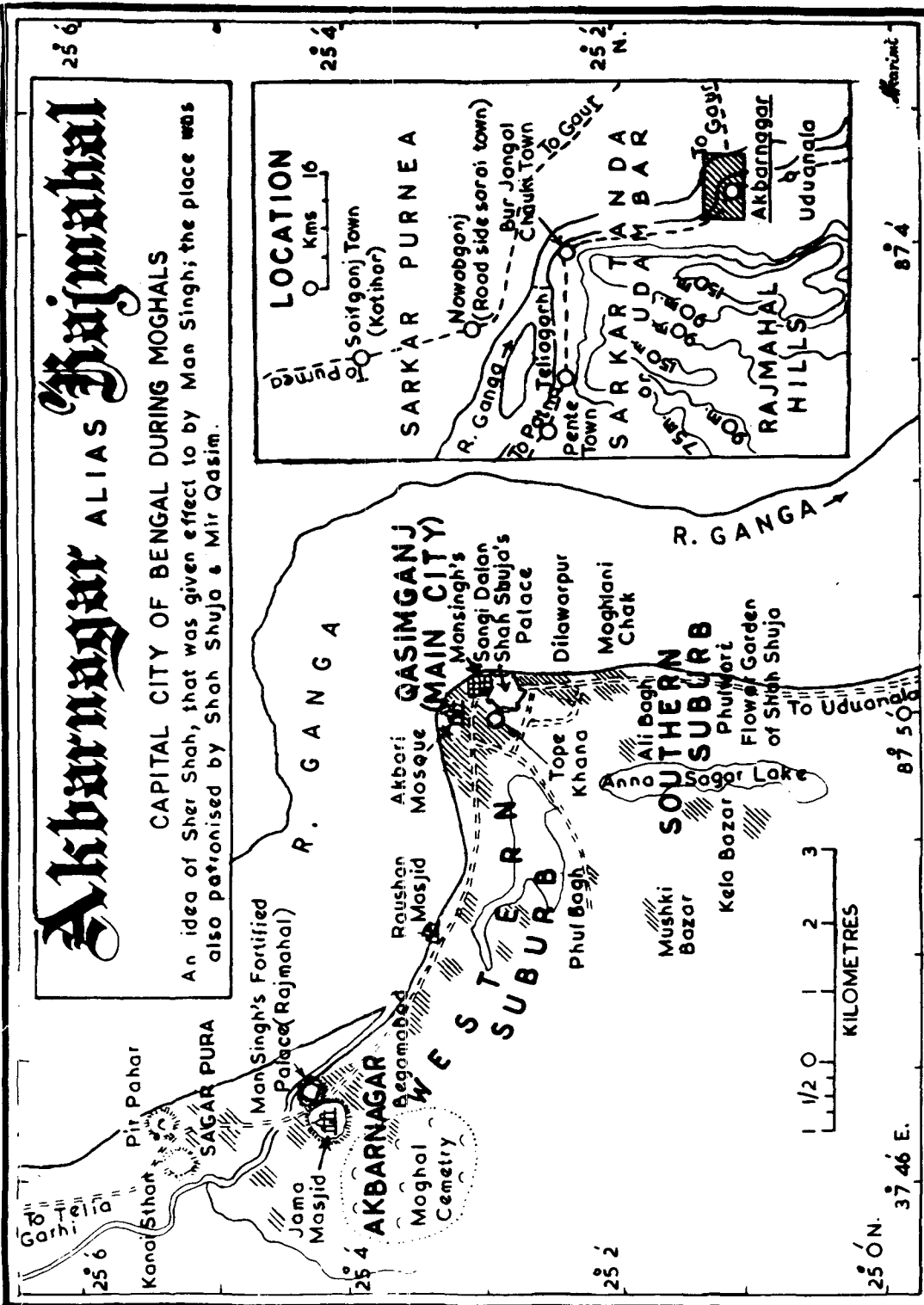
77. The locality is now corrupted and called 'Kawwa Khoh'

78. Shad, Ali Mohd. - Tarikh-i-Bihar, 'Urdu' (Patna 1901) page 57

Akbarnagar (Lat. 25° 4' 15" N; Long. 87° 46' 45" E) known⁷⁹ originally as Agmahal was an ordinary village and was noted for⁸⁰ many important battles fought. Man Singh, the Rajput general of Akbar selected it for the seat of the Governor of Bengal as it stood on the outskirts of the Rajmahal hills and so was safe from the hands of enemy. During the rainy season when all area beyond that in the east was flooded and the enemies with their flotilla (Nawara) could occupy them, this was the only place overlooking the deltaic plain safe from them. Besides, it excelled the rest of Bengal in climate. Indeed Sher Shah had intended to shift the⁸¹ Bengal capital from Iakhnauti which had become unsuitable and unhealthy owing to the shifting of the river — this idea of Sher⁸² Shah was actually translated into action by Nawab Daud Khan who⁸³ fortified it as his last stand against the Mughals. But later after its capture by Akbar and the construction of the fortified palace called 'Rajmahal' and its occupancy by the emperor and

-
79. The place was called Ag-mahal for whenever the rulers of Bengal from their capital, Gaur set out on travel in Bihar, their advance tents were sent to this place; so that the people ~~boahed~~ it 'Ag-mahal' i.e. Advance palace. The common people however called it Ag-mahal because most of the houses here were thatched with straw and bogla and easily caught fire - Abdul Latif (1608) J.B.O.R.S. (Patna 1919) page 601.
80. On the opposite bank of Shahpur near Brail, Serajuddaula was caught and assassinated at Murshidabad; Mir Qasim's troops were defeated by Major Adams in Aug. 1763, John Christian - (Calcutta Review, 1891, page 198) while a worthy and heroic foe like Daud Khan deserving a better fate was brutally killed (1576) by Khan-i-Jahan Hussain Quli Khan, Akbar's military general - Salim, G.H. - Riaz-us-Salatin, translated by A. Salam, (Calcutta 1902) page 164.
81. Gaur (Iakhnauti of Ikhtiaruddin ibn Balhtiar Khilji's time or Jannatabad of Humayun's time) in Malda district was the capital of Bengal for long.
82. Salim, G.H. - Riaz-us-Salatin - translated by A. Salam (Cal. 1902) page 44 and 162.
83. Ibid, page 44.

FIG. NO. 31



SOURCE:—THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL & GEOGRAPHICAL ACCOUNTS; SURVEY OF INDIA SHEET 72/16 WAS ALSO CONSULTED.

subehdars soon turned it into a big city known to the people as Rajmahal or styled as Akbarnagar in the official paper. For long Akbarnagar remained a large and popular city and was for twenty years the viceregal capital of the Bengal province under Shah Shuja who adorned the city with beautiful marble palaces (Fig.31) Even during later Mughal period a foudar of rank (the head of a sarkar) on behalf of the Governor of Bengal resided there.

Monghyr (Lat. 25° 23' 0" N, Long. 86° 27' 45" E) according to Abul Fazl, located in pargana haveli Mungir (Monghyr) was the principal seat of Sarkar Monghyr and commanded the 31 mahals or parganas of the whole sarkar. The town consisted of the fort along the Ganga, main town and bazar to the south of the fort and sarai stations such as Purab Sarai in the east and Safiabab sarai in the south east (Fig.32). While again in 1670-71 John Marshall who visited Monghyr during Aurangzeb (See Appendix II) presents a detailed account of the locality. According to him Shah Shuja's palace was handsomely built, located on the west side of the fort. There was a great garden at the northern end of the town and also of the palace while at the southern end of the town he saw several thatched houses, several tombs and mosques. The town, as John Marshall noted, stood upon an ascent while the river Ganga

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84. Abdul Latif's account of river trip from Agra to Rajmahal during Shah Jahan by J. Sarcar - Journal of Bihar & Orissa Research Society (Patna, 1919) page 601. (Abdul Latif is said to have accompanied his patron Abul Hassan (father-in-law) of Shah Jahan who was appointed Diwan of Bengal in 1608).
85. Salim, G. H. - Riaz-us-Salatin 'Persian' translated by A. Salam, (Calcutta, 1902) page 44.
86. Askari, S. H. - Bihar in the time of Aurangzeb - J.B.R.S. (Patna 1946) page 65.



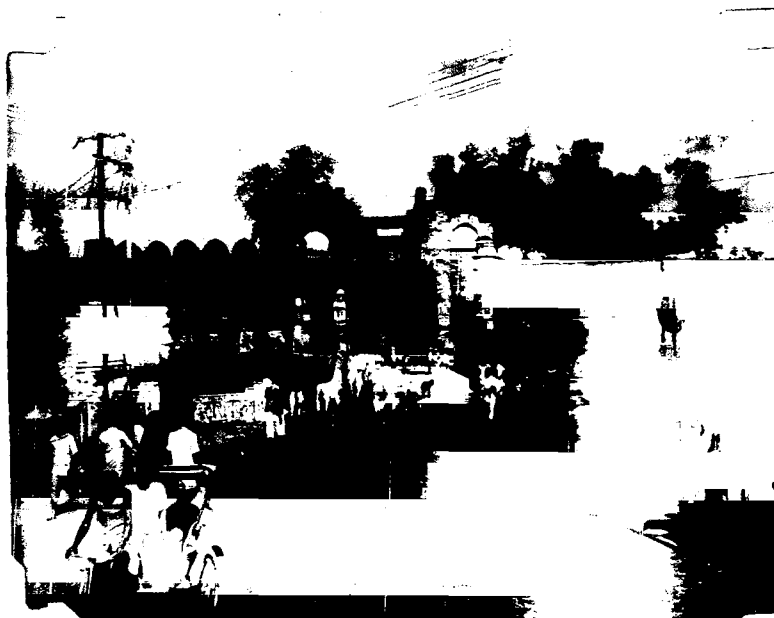
No. 10

Monghyr Fort - the pivot of an important garrison town along the Ganga during Muslims.



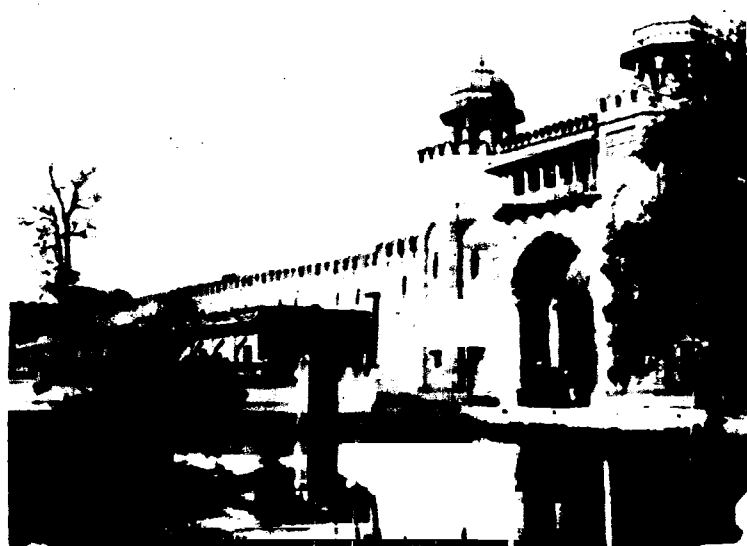
No. 11

Fort at Darbhanga - the residential headquarters of the Raja of Darbhanga Estate.



No. 10

Monghyr Fort - the pivot of an important garrison town along the Ganga during Muslims.



No. 11

Fort at Darbhanga - the residential headquarters of the Raja of Darbhanga Estate.

lay some 8 to 10 yards below the town.

Purnea was a great military seat under the rule of a faujdar and was the headquarters of Sarkar Purnea of Bengal Subah. As a frontier sarkar along the border of Bengal, Bihar and Nepal, it had always an extra administrative importance specially because on the north of it was the independent kingdom of Morang (Nepal). Purnea thus very often formed the seat of the Governor of Bengal for this section. To suppress the plundering misdeeds⁸⁷ of the Raja of Biratnagar who was having a cavalry of 15,000 a fort at Jalalabad in an island in river Kosi by Syed Jalaluddin, the first Muslim Raja of Khagra (Kishanganj)⁸⁸ was erected at a distance about 20 kilometres north of Purnea. Within the city too there was a fortified house called Lalbagh. The city during the time of Jafar Khan Governor of Bengal and Saif Khan, Governor of Bihar, was at the height of its prosperity and it was specially noted for its cottage industries. The area was noted for Jasmine and bela redrose and other flowers and exquisite scents. The town was very much scattered and consisted of various detached parts⁸⁹ on both sides of the river Kusi (Kosi) and Sunra. Altogether the large city occupied a space of about 5 kilometres square but much was occupied by plantations, gardens and open space. The settlement to the east side of the river was rather compact and considerable. It consisted of one wide and tolerably straight

87. Salim, G.H. - Riaz-us-Salatin, translated by A. Salam (Calcutta, 1902) page 36

88. The zamindari of Sarjyapur (later on called Khagra Estate) was bestowed by Emperor Humayun in 1545 to Syed Khan Dastur.

89. Salim, G.H. - Riaz-us-Salatin, translated by A. Salam (Calcutta 1902), page 37.

road decently built and extended for about half a mile from west to east. Important mohallas were Begum Doori, Lalbagh and Khushki bagh. At a little distance south was Abdullahnagar a detached suburb while Minabazar was rather a detached suburb in the north. About a mile north of the town was the Maqbarabagh the burial⁹⁰ ground for the Nawab families.

Dar-i-Bengal or Toghlaqpur urf Tirhut (Darbhanga) (Lat. 26° 10' 0" N, Long 85° 54' 0" E) was the gateway of Bengal during 14th century for it was located rather at the eastern limit of Bihar proper. The main road from Dar-i-Bengal through Purnea, was probably an important highway at the Bihar extremity of which writes⁹¹ John Christian stood this gate of Bengal. The place in pargana haveli (Pargana proper) was the headquarters of Sarkar Tirhut and was an important cantonment of the Muslim period. The large tanks such as the present Ganga Sagar Dighi, Harehi, Lakshmi Sagar,⁹² etc. were dug to make raised ground for the soldiers houses. Towards later period it formed the residential headquarters of Darbhanga Raj Estate whose capital from Bhawara near Madhubani was shifted to this place in 1762. While returning from Bengal in 1305 A.D. Mohammad Toghlaq conquered Tirhut and demolished the stronghold of Karnataka dynasty of Simraon (26° 10' N and 85° 50' E) - north of Motihari now in Nepal and Sugaon (a little to the south of Sugauli in Champaran) and established a mint

90. Buchanan Hamilton - Purnea Report (1811-12) (Patna 1813)
Page 58-60

91. Christian, J.- Calcutta Review, 1891, page 38

92. Hunter, W.V. - S.A.B., Vol. 13 (London 1871), page 60.

town at Tirhut (which was sometime called Toghlaqpur alias
93 Tirhut). Here he is known to have built a fort.

Arrah (Arammagara or Chakrapura of ancient Bihar,
94 (Lat. 25° 33' 30" N, Long. 84° 40' 30" E) was reclaimed from the
jungles (Aranya) which extended from Rohtas as far north as this
place. It is possible that the original name Arrah may mean simply
a protection or an embankment or a place on a high bank, "for it
stood at the eastern end of a stretch of a higher ground that once
94 formed the southern bank of the Ganga." Shahabad was the name given
to it during Muslim times' says John Christian, 'when it became a
city of the king'. Emperor Babar marched to this town after his
victory over Mahmud Lodi and his rebellion Afghan followers. The
site of the old courts of the district judge was probably the place
where he pitched his camp and declared his assumption of sovereignty
over western Bihar. During the time of Aurangzeb the northernⁿ 11
mahals or parganas of old Rohtas sarkar were detached to form
a separate sarkar called 'Sarkar Bhojpur' and Arrah thus formed
the seat of the local foudar since then. The town then stood on
a small elevated space surrounded by numerous creeks and lowland
95 liable to be occasionally flooded. The extension was possible only

93. Sarkar, J.N- History of Bengal, Vol. 2 (1200-1757) -(Dacca, 1948)
page 84.

94. 'There is reason to believe that in the 7th century A.D. the
Ganga flowed closer to Masarh & Arrah town. The memory of
this course seems to be preserved in the name of Gangi given
to portions of old channel of the Ganga to the north of Arrah'
Oldham — J.B.R.S. (Patna 1925) page 207.

95. The lower parts of the town have for centuries been liable to
flood in the occurrence of high floods in the river Son. Much
damage was done in this way so recently as 1923 when the
river Son rose to an unusual height and there was water
running at a high level in the lanes of Milki mohalla of
the town of Arrah.

after making embankments, digging tanks and building houses on the raised ground on account of earth thus thrown out. The Buxar road, ran its whole length. The city was closely built on both sides of the road in its certain parts, but towards the west and on its north side was an open lawn, which later on was the site for the post-Muslim growth of the town. Although the soil was poor and the plantations rather stunted, several of the people seemed fond of gardens in which they had collected a great variety of trees and a good many flowers. The Jama Masjid was erected in the time of Aurangzeb.

Boglipur (Bhagalpur, Lat. 25° 14' 45" N, Long. 86° 58' 40" E)

was without doubt an administrative town and is often mentioned in Akbarnama by Abul Fazl, as the chief town in the east towards Teliagarhi. It formed the headquarters of Pargana Boglipur (Bhagalpur) and was, as a matter of fact, the seat of an imperial foudar (military governor) under Shah Jahan.

Tiladha (Telhara, Lat. 25° 13' 30" N, Long. 85° 11' 15" E)

in the time of Akbar was the head of important dastur (district) yielding Rs.73,000 of land revenue and till late was a large town containing 10,000 inhabitants.

Specially built towns -

Residential (Palatial) Towns - In association with the campaign for political supremacy over the region, the imperial

96. Oldham - Shahabad Journal of Francis Buchanan - J.B.R.S. (Patna 1925), page 205.

97. Hunter, W.W. - S.A.B. (Bhagalpur) Vol.14 (London 1877) page 82.

98. Cunningham, A. - A. S. I. Report 1875-76, Vol.II (Calcutta, 1880), page 165.

throne at Delhi appears to be rather liberal in offering Jagir-lands to the local rajas or to the imperial commandants for their loyalty or bravery shown in the battle field. On some occasion they were honoured by titles like Raja, Mansabdars, Zamindars etc. These rajas or imperial officers thus in course of time established planned towns in their own jagirlands and constructed palaces for themselves; so that a number of such residential (palatial) towns were established throughout the region during the time of the Mughals. Akbarpur-Rohtas, Daranagar (5 miles south of Rohtas) Haidernagar 8 Kms. south of Hussainabad and Hussainabad in the Son re-entrant, Sherghati, Nau Abad (Navada) in the southern fringe of Gaya district and Shamsuddinpur (Samastipur), Saifganj (Katihar) and Luzaffarpur in North Bihar, all were established in this way (Fig.29). On his return from Orissa, Raja Man Singh the Rajput general of Akbar, laid down a special town called Akbarnagar while close to Akbarnagar some sections were colonized by Ranasagar and Agar Singh and this urban section was called Sagarapur.

After his victory over Rohtas fort, Man Singh selected
99
Rohtas for his residence in 1564 and made addition to it while close to it and lying along the west coast of river Son, he is said to have laid down the foundation of a new township for
100
colonizing the local Pathans. It was called Akbarpur alias Rohtas (Fig.32). In 1664, Shah Jahan's family was kept under protection here and it was here at Rohtas that Dara Shikoh was born. Yet

99. Hunter, W. W. - S.A.B. 'Shahabad' Vol.12, (London 1877)
Page 150.

100. Roy Coudhary, P.C. - Inside Bihar (Calcutta 1962) page 45.

another township, a little distance to the south of Akbarpur alias Rohtas, on the same western bank of river Son was constructed and was called Daranagar after the little prince, while a little distance to the north of Rohtas along the same alignment Tilothu town was founded by Ilyas Khan, the Commandant (Qiladar) of Rohtas fort, in his own jagirland. As a residential place of the Qiladar containing his palace, the place grew as an important residential town of Pathans. A mosque was built here during Aurangzeb's time.

Haidernagar & Hussainbad in Palamau district on the opposite side of river Son facing Daranagar and Akbarpur were residential towns of later origin. Husainbad named after Husain one of the grandsons of Prophet Mohammad, was founded in the early part of the 18th century by Nawab Syed Hidayat Ali Khan, the Deputy Governor of Bihar and father of the author of Seir-i-Mutaqharin. It was built on the site of old village of Japla. Haidernagar, situated 8 Kms. (5 miles) to the south of Husainabad was founded by Syed Nabi Ali Khan, the son of Nawab Hidayat Ali Khan. He is said to have laid down the foundation of this town after his father had built Husainbad.

Other such residential towns in South Bihar were Shahr-i-ghati (Sherghati), Nauabad (Nawada), Safiabad and Bakhtiar-pur. Shahr-i-ghati, a town close to ghats or scarps specially built by Sher Shah on the famous Grand Trunk Road (the road was built in four months) while Safiabad near Jamalpur and south-west of Monghyr was specially built by Saif Khan, the Governor of Bihar. Present Nawada town is a corruption of Nau-abad and the portion

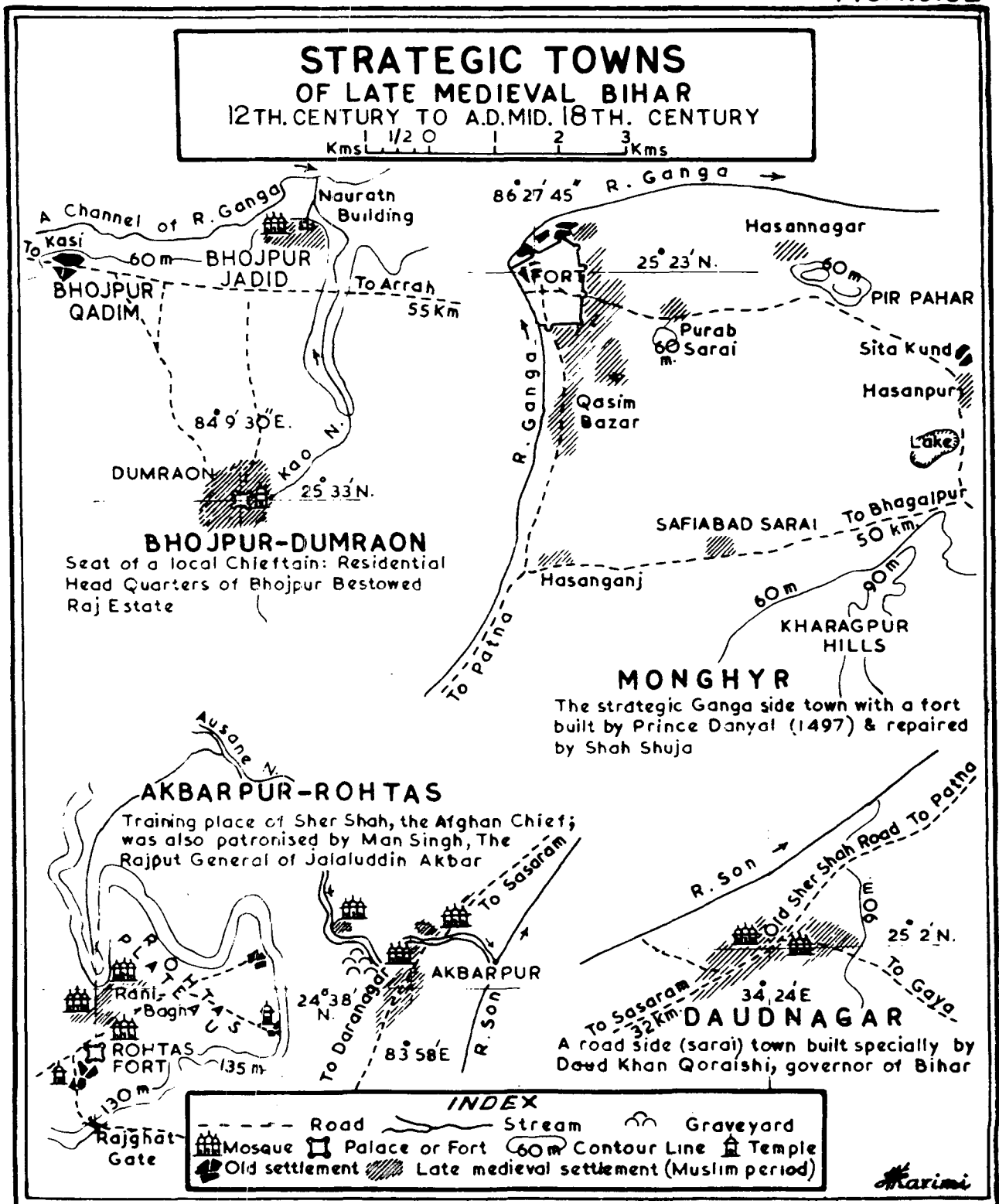
of the present town lying to the left to Khri river is the original Muslim town known then as Nau-Abad meaning 'New Town'.

Towns like Saifganj, Muzaffarpur, Shamshuddinour (Samastipur), Hajipur, Aliganj (Siwan) and Mehsi in North Bihar also owe their origin much to the same cause. Saifganj (Katihar) was established by Nawab Saif Khan and was a flourishing town close to Kusi (Kosi) river in Purnea Sarkar. When the railway was extended on to it in the post-Muslim period, the name Katihar was suggested for the railway station (after the name of a neighbouring village) just to avoid confusion between Sahibganj and Saifganj. Muzaffarpur owes its origin to Muzaffar Khan who was the Amil or Collector of Chakla Nai. He is said to have selected 75 bighas of land from the village of Sikandarpur on the north, Saiyedpur in the south and Saryaganj on the east and called it after his
101
own name. Towns of Shamshuddinour (Samastipur) and Hajipur owe their construction to Bengal king Sultan Shamshuddin Mahmud
102
Bhaingra who was known as Haji Ilyas. The town of Hajipur was specially built by him in 1345-48. Bettiah, Bhavara (south of Madhubani) and Khagra-Qutubganj in North Bihar and old and new Bhojpur, Dumraon, Buxar, Bihar, Jagdishpur, Tekari, Gidhaur and Kharagpur in south Bihar, although included in this category, were far more flourishing and prosperous towns and looked gay, and were really speaking the residential headquarters of great 'Raj Estates'.

101. John Christian - Calcutta Review 1891, page 33

102. Salim, G.H. -- Riaz-us-Salatin, translated by A. Salam
(Calcutta 1902) page 134.

FIG. NO.32



SOURCE :- SURVEY OF INDIA SHEETS cf. FIG. I.

Karur was the original home of the Gantara Shahi Rajputs who had come in the present district of Shahabad from Ujjain. As some of the Rajputs sided with Humayun and some with Sher Shah, there naturally grew two groups of Raj Estate with their independent families at Bihee and Bhojpur (Fig.32) but at times they appear to be united as well. Raja Rudra Pratap Narayan Singh removed the seat of his family to Naya Bhojpur which remained his residential headquarters till 1745 when Raja Horil Singh removed his residence to Dumraon (Fig.32) while his nephew Rudha Singh and Udwant Singh¹⁰³ founded the families of Jagdishpur and Buxar. Tikari was the residential headquarters of Tikari Raj Estate. The estate was bestowed to Sunder Singh by Shah Alam for supporting Ali Vardi Khan against Maratha invasion. Gidhaur was the headquarters of Gidhaur Chandrabansi Raj Estate. This estate was offered to Raja Dulan Singh in 1651 by Emperor Shah Jahan. Kharagpur was the seat of Roz Afzun Mansabdar who was allowed to keep 7,000 horses by Jahangir in 1635. In North Bihar, Khagra town which now forms a mohalla of Kishanganj was erected by Syed Fakhruddin Hussain towards the close of 18th century. He also established a market called Qutubganj and a Karbala called Husainbagh here. The Khagra Nawab estate into which this town is located was originally known as Zamindari or Sarjyapur and was bestowed to Syed Khan Dastur in 1545 by Emperor Humayun. Simri in Monghyr north was the residential headquarters of two zamindar brothers, Sheikh Ghulam

103. O'malley, L.S.S. & James, J.W.S.- B.O.D.G. 'Shahabad'
(Patna 1924) page 168.

and Sheikh Achchay Chaudhari. Their headquarters however shifted to Bakhtiarpur in Monghyr in 1891. Bhawara near Madhubani was the residential family headquarters of Raja Darbhanga whose headquarters in 1672 was shifted to Darbhangha. The Darbhanga Raj Estate was the biggest estate in Bihar and was bestowed to Mahesh Thakur by Akber for saving his life in Purnea from lightning. Similarly Bettiah and Sheohar were the residential headquarters of Bettiah Sheohar Raj Estate bestowed to Gaj Singh by Shah Jahan, while Rannagar estate which was responsible for the growth of Rannagar town was bestowed by Aurangzeb in 1676.

Roadside Sarai Towns - To the same category of specially built towns can be included the sarai towns constructed along with imperial highways, so that Daudnagar, Nawabganj, Safisarai, Shahsarai (Sas aram), Jahanabad (Kudra) etc. were towns specially built along the roads as sarais (inns) for the sake of protection against thieves and dacoits. Nawabganj, 20 kilometres north of the Ganga bank opposite Sahibganj and about 50 kilometres south of Purnea was located on the royal highway between Purnea, the sarkar headquarters and Rajmahal the provincial seat of the Nizamat of Subah-i-Bengal. It lay to the west of still existing vast was the jungles. Similarly on his way back to Patna after his victory of Kothi fort in Palamau in December 1661, Daud Khan

104. Nadim -- Bihar Number , 'Urdu' monthly (Gaya 1940) page 43

105

Qoraishi is said to have selected site near the old village of Anchha on the eastern bank of river Son in Gaya district, to establish a post with a view to protect the road from robbers who infested the jungles in that vicinity. The insecurity of the jungle road about Anchha and Bhadoi was then proverbial -

" Anchha langhe aur Bhadoi;
Tab Jane ghar aaye Batohi"

[Only after he has crossed Anchha & Bhadoi; you can be certain of wayfarers reaching home].

Emperor Aurangzeb was pleased to sanction the plan of such a town there and Anchha, Manora and Goh parganas were offered as Jagirs to Daud Khan in view of his great heroism in capturing the fort of Palamau. ¹⁰⁶ Daudnagar town was thus laid down immediately in 1662 (Fig.52) while Shamshernagar, a few kilometres to the north of Daudnagar was also established along the same road by one Shamsheer Khan in the same period. 25 kilometres east of Daudnagar in parganas Goh, Hamid Khan son of Nawab Daud Khan Qoraishi ¹⁰⁷ colonized Hamidnagar. Daud Khan in the part of the town built by him erected a handsome inn (sarai) surrounded by a rampart of brick with battlement and loop holes, and strengthened all the corners by bastions, probably a fort.

Chauki Towns - A careful analysis, however, reveals

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105. Zamiruddin Ahmad -- Daud Khan Qoraishi, Governor of Bihar & founder of the town of Daudnagar, J.B.O.R.S. 1918 (Patna 1918) page 292-93.
106. Alangir Nana Qalmi page 513; Shad, Ali Mohd. - Tarikh-i-Bihar page 25-26; Aasar Sharf page 90; Sarkar, J.H. - History of Aurangzeb page 866.67; Nadim Bihar Number, 'Urdu' monthly 1940, page 55.
107. Shad, Ali Mohd - Tarikh-i-Bihar 'Urdu' (Patna 1901) page 25-26.

that most of the sarai towns specially in the narrow neck of land between Kahalgaon (Colgong) and Akbarnagar (Rajmahal) served as important ¹⁰⁸ Chauki (Custom house) towns. This narrow riparian tract hemmed in by the Ganga in the north and the Rajmahal forested hills in the south was supposed to be the key to Bengal. The sites along the southern banks thus controlled both the land and river traffic between Rajmahal in the east and Azimabad in the west. A number of custom stations with sarais were thus established. Rajmahal, Bur Jungul and Pente (Pir Painte) towns were, however, notable chauki towns along the Ganga during the Mughals. It was at Rajmahal that dastaks (permits) were available while Bur Jungul town with a sarai somewhere near present Sakrigali was the greatest chauki for all land traffic south of the Ganga between the two capitals of Bengal and Bihar. ('There was a great gate' writes John Marshall (11th April 1670) 'which none could pass by land un-examined'. He further goes on to state, 'every one was stamped upon the cloth before starting to the west for Patna or other places'. The town of Pente (Pir Painti) near Teliagarhi overlooking proper Bihar Plain, says Marshall, 'was a centre of collection of river customs'. Probably Pente was the greatest checkpoint for all river traffic as was Bur Jungul for land traffic.

Towns of Religious Association

Sacred Dargah towns - Apart from the provincial capital, towns of foudjars and other strategic garrison towns and seats of

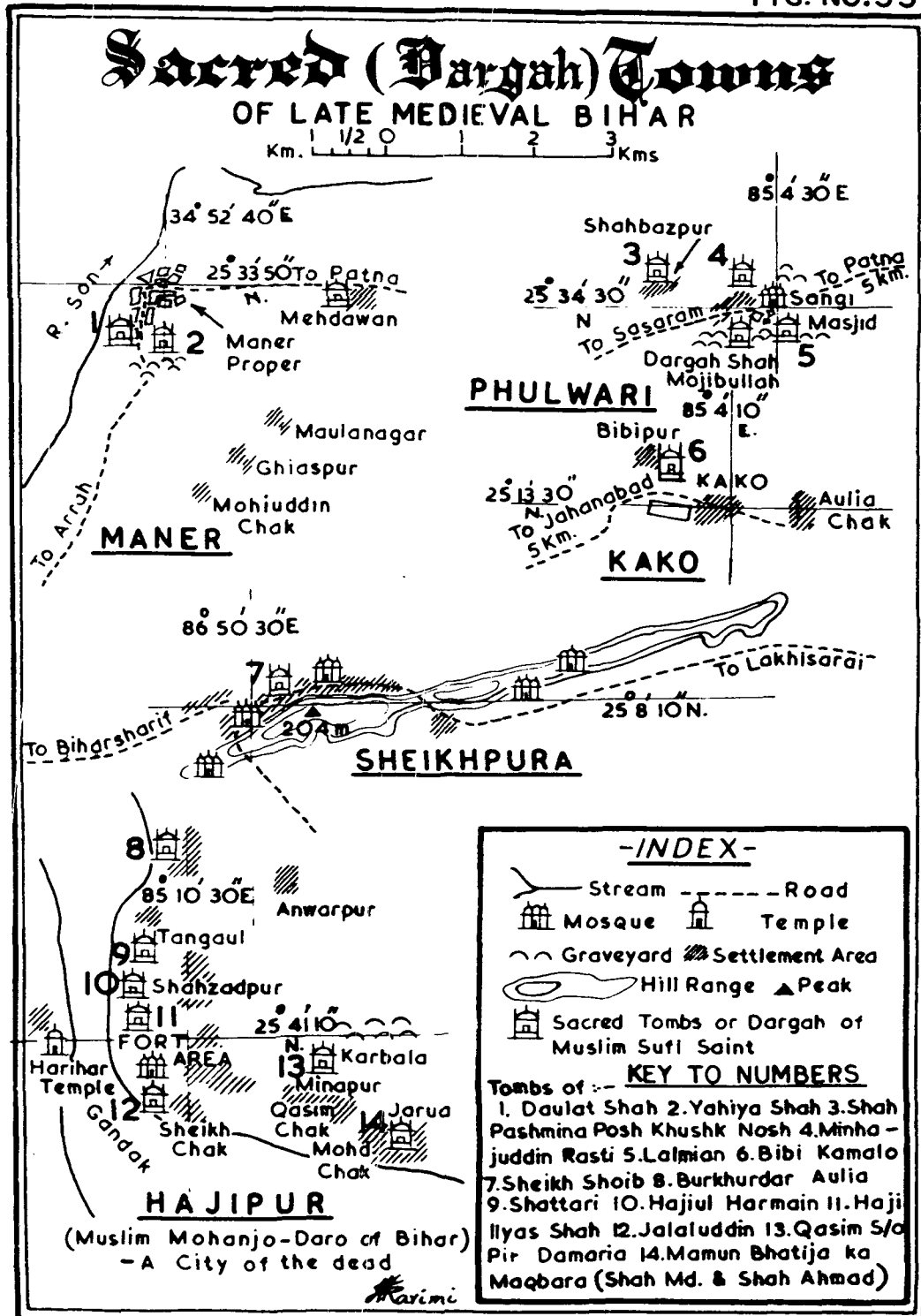
108. Sarkar, J.M. - 'Travels of John Marshall' J.B.R.S. 1951
(Patna 1951) page 65.

local chiefs or imperial officers or towns built due to other political influences, there are yet various other towns of considerable importance that owe their growth to their being the abode of the 'pirs' and 'sufis' Muslim saints, of the age. These sufis cultivated knowledge independently through discourses, literary pieces, maktubats (letters) and malfuzats (table talks) These were messages of love and peace and served the means of attraction for both the Raja and paraja. Indeed Makhdum-ul-mulk Hazrat Sharfuddin Bihari was one of the celebrated sufis of late medieval India who saw the days of three dynasties and eleven sultans of Delhi (Ghiyasuddin Balban to Firuz Tughlaq) and died at the ripe age of 122 in 1380. His father's tomb at Banor and his own at Biharsharif were visited by rulers and princes like Sikandar Lodi, Babar, Shah Jahan, Shah Alam and various others. On account of new preaching of love and affection by the great saints many new settlers were attracted and the place gradually grew into big villages called 'qasbas'. Especially after the death of such pirs and the construction of dargahs and their association and support by the Muslim rulers of the age, these sacred places grew in importance. Usually at such sites the annual Urs (the religious gathering) became important feature. Associated with the mosques and dargahs these growing qasbas

109. The eleven Sultans were: Ghayasuddin Balban, Moizuddin Kaiqabad Jalaluddin Firoz, Buknuddin Ibrahim, Allauddin Khilji, Shahabuddin, Umar Qutubuddin Iqbal, Nasiruddin Khusr, Ghiyasuddin Tughlaq, Mohammad Tughlaq and Firoz Tughlaq.

110. Askari, S. H. - The malfuzat and maktubat of a 14th century saint, J.B.R.S. 1948 (Patna 1948) page 27.

FIG. NO.33



SOURCE : " SURVEY OF INDIA SHEETS cf. FIG.1.

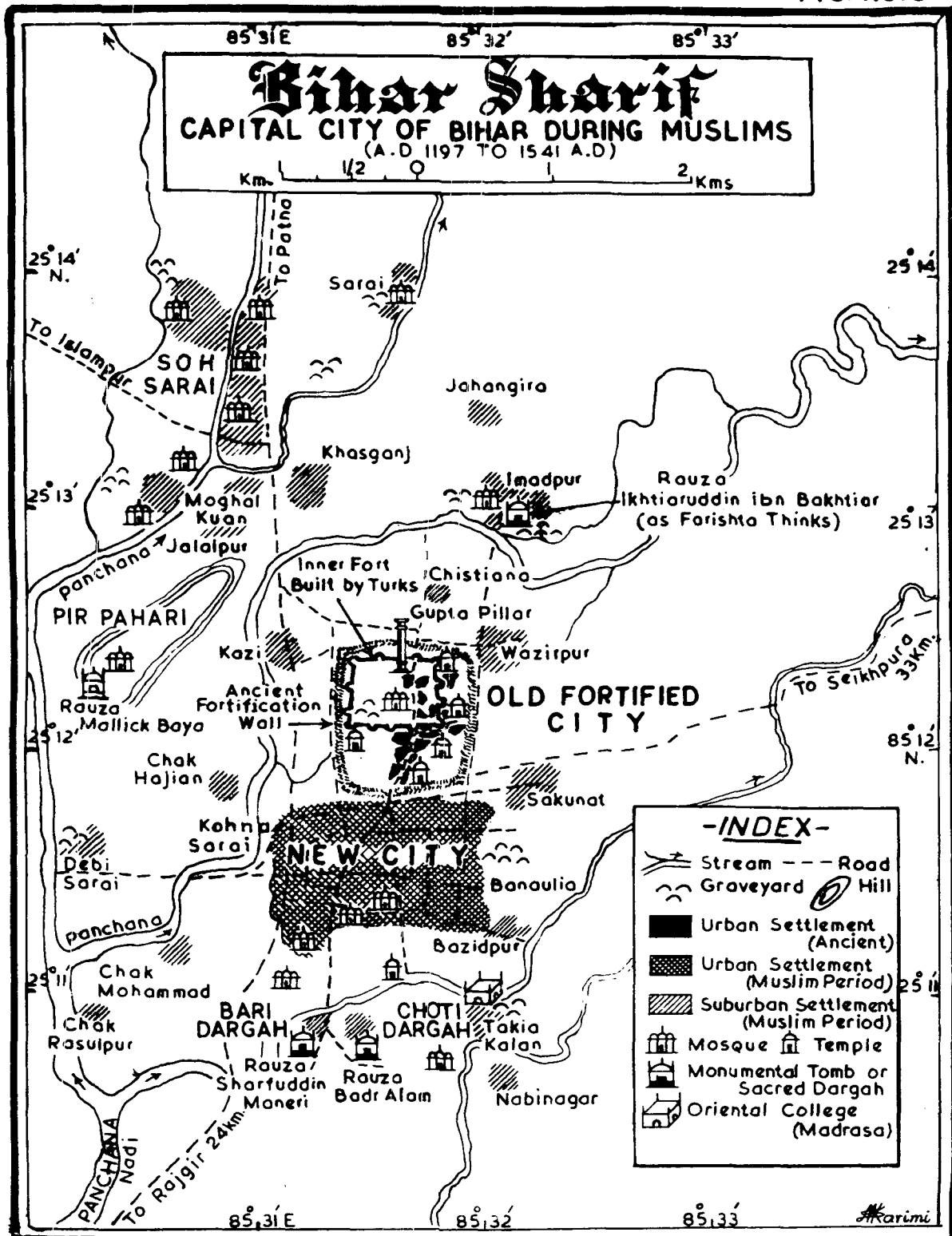
or the big villages thus emerged as important Islamic cultural centres of the age. Notable among these were Manersharif, Phulwarisharif, Biharsharif, Sheikhpura, Basarh, Darbhanga, Keko, etc. (Fig.33). Manersharif as the home of the sons and descendants of Imam Taj Faqih, the direct descendant of Hazrat Abu Dard (uncle of Prophet Mohammad), has a deep association with most of the great Muslim saints of Bihar. On being invited by one Momin Arif of Maner, Imam Taj Faqih came from Jerusalem to Maner in 1180 A.D. Imam Taj Faqih sent his one son Ismail to preach Islam north of the Ganga in Tirhut. The famous sufi Sheikh Abul Faiz Mohd. Bin Ola alias Qasim Ola of Banis Basarh(Vaisali) in Muzaffarpur district and Pir Ruknuddin of Jandaha of the later dates were descendents of Ismail. As a matter of fact there are a host of sacred places that grew in importance due to the activities of the great saints. Some of the places in north Bihar were Darbhanga on account of Makhdum Shah Sultan Husain, Shah Barkatullah (Raju), Shah Birkhe, Shah Majzub, Pir Shah Mazir, Hazrat Shah Tajuddin Chisti and Bhika Shah Sailani; Aliganj(Siwan) due to Makhdum Syed Hasan and Shah Zahid, Hajipur for being the abode of Pir Damin son of Makhdum Syed Hasan, Haji Shah Ilyas etc; Teghra on account of Maulana Khwaja Ali; Lokri Dargah (24 Kms.north of Aliganj) as a place of Chilla-kashi (meditation) of Shah Arzan of Patna; Ushri-Hasnapura as the abode of Pir Abdul Malik and Makhdum Syed Hasan Chisti and Melsi in Champaran for the dargah of Data Halim Shah who is once said to have caused a she-calf to give milk.

South Bihar was allotted as a sphere of work to the other two sons of Imam Taj Faqih -- Israil and Abdul Aziz. The former was the grandfather of Shah Sharfuddin while the later was the father-in-law of Bibi Kamalo, a female saint of Kako in Gaya district. Makhdum Sheikh Shoib of Sheikhpura in Monghyr district was the grandson of Abdul Aziz bin Imam Taj Faqih. The notable sacred places that grew in importance on account of the activities of the Muslim sufis in south Bihar were Manersharif, Biharsharif and Phulwarisharif (Fig.33). But the places like Jethuli (near Banka Ghat) Rajgir, Patna, Hilsa, Sheikhpura Bazidpur-Barh, Kako, Shahr-e-ghati, Bhagalpur, etc. were no less important.

Biharsharif (Lat. $25^{\circ} 11' 0''$ N; Long. $85^{\circ} 31' 0''$ E) among them all was much reputed specially because of its royal patronage and as an abode of the greatest sufi of Bihar --- Makhdum-ul-mulk Shah Sharfuddin Maneri. He was Sheikh from his father's side, his father tracing his genealogy to Abdul Mutalib, grand-father of Prophet Mohammad, so that the great saint was a shiekh of great reputation. His mother Bibi Razia (wife of Ahmad Yahia Maneri) daughter of Shah Shahabuddin Pir Jagjot of Jethuli (Banka Ghat) Patna was a true saiyadani, a lady lineally descended from Prophet Mohammad. Makhdum-ul-Mulk passed twelve years of his early life at Sonargaon (Dacca); then wandered in the hills of Rajgir and finally settled down at Biharsharif.

111. Imam, S. I. - The Pirs or Muslim Saints of Bihar
J.B.O.R.S. 1917 (Patna 1917) page 341

FIG. NO.34



SOURCE :- THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL & GEOGRAPHICAL ACCOUNTS ;
SURVEY OF INDIA SHEET 72 9/12 WAS ALSO CONSULTED.

The great dargah of Shah Sharfuddin standing on the southern bank of Panchana river in the southern suburb of the city of Biharsharif (Fig.34) was held in great veneration by Muslims all over Bihar who still assemble here on the 5th day of Shawwal (month of Idd) to celebrate the anniversary of his death. The Choti dargah just to the north east of the great dargah of Shah Sharfuddin was the pivot of the activities of Shah Badruddin Badr Alam, a famous sufi of Chittagong who settled in Biharsharif and died in 1440 A.D. while yet another dargah of the famous martyr and Mufti of Bihar, Malik Ibrahim Abu Bakr urf Bayd Sufi was located on the summit of the Pir Pahari in the north western suburb of the city.

Phulwari Sharif along the south western suburb of Patna was also equally important. Initially it was the abode of Makhdum Shah Minhajuddin Rasti and Shah Ataullah. The tomb of the former is still located in the Rastiganj mohalla to the north of the present Ekka stand while the latter was killed by mistake by Sher Shah's forces. His tomb as 'Shah Shahid's Mazar' is located at Manora Salarpur on the bank of Punpun river, about 5 miles to the south west of Phulwarisharif. These were great sufis who came and settled at Phulwari in the 7th and 10th century A.D. and among the descendants of whom hundreds of other saints grew. Tajul Arfin Shah Mojibullah during the later Mughals was a notable saint and a descendent of Shah Ataullah Zainabi. The Mojibia dargah (Fig.33) located to the southern suburb is a place of great veneration for the people of Bihar where on the



No. 12

Dargah Mojibia, Phulwarisharif - a place of great veneration for the Muslims in Bihar.



No. 13

The Khanqah & Madrasa Mojibia, Phulwarisharif - one of the greatest seats of Oriental learning during the Moghals.



No. 12

Dargah Mojibia, Phulwarisharif - a place of great veneration for the Muslims in Bihar.



No. 13

The Khanqah & Madrasa Mojibia, Phulwarisharif - one of the greatest seats of Oriental learning during the Moghals.

birthday of Prophet Mohammad an annual urs is still held.

At Manersharif the Choti Dargah entombing Makhdum Shah Daulat, constructed with delicacy and fine finish by Ibrahim Khan, Governor of Bihar in 1616 is typical of the architecture of Jahangir's time and perhaps the best in Bihar; while the Bari Dargah containing the mosque of Sheikh Makhdum Yahia Maneri stood to the east of the large tank with masonry wall and ghats and pillared portions jutting out into it which was once connected with the old bed of the Son by a tunnel 400 ft. long (Fig.33). Makhdum Yahia Maneri was a member of a celebrated family of saints being the father of Makhdum-ul-mulk Shah Sharfuddin of Bihar, son-in-law of Shah Shahabuddin Pir Jagjot of Jethuli and brother-in-law of Bibi Kamalo. An annual urs to commemorate the death of Makhdum Yahia is held every year on the 12th of Shaban (month preceding Ramzan) when his sacred relics and those of his ancestor Imam Taj Faqih are exhibited.

Manersharif, Phulwarisharif, Hajipur and even Shahr-e-ghati can be, as a matter of fact, regarded as the Muslim Mohanjodaro of Bihar. Other sites that formed the centres of attraction and places of sacred urban agglomerations were Kako about 4 miles to the east of Jehanabad in Gaya district (Fig.33) due to Bibi Kamalo, a famous female saint of Bihar, where still annually 5,000 people assemble to celebrate the festival called 'Ghazi Mian Ka Biah'; Jethuli about one mile north of Bankaghat station noted for Kachchi dargah of Shah Shahabuddin alias Pir Jagjot and the Pakki dargah of Shah Adam Sufi; Rajgir as a place of reyazat of Hazrat Makhdum-ul-mulk of Bihar and for

the hot springs where he used to perform his ablutions; Patna was the abode of Pir Bahore Shah, Shah Arzani and Shah Murad; Shahbazpur (Sabazpura) near Dinapur Railway Station for Shah Badruddin Badr Alam's tomb; Sheikhpura for the dargah of Sheikh Shoib (Fig.33); Lekhisarai where the tomb of Maulana Noor occurs; Maulanagar (Surajgarha in Monghyr district) for the dargah of Shah Nizamuddin Ali urf 'Maula Shah' a descendant of Syed Ahmad, saint of Medina; Jaitnagar (Hilas) on account of the dargah of Shah Juman Madari and Shah Jamaluddin Jannati; Telhara for the dargah of Shah Yusuf Iqbal; Monghyr for containing the tombs of Shah Nafah and Bhagalpur as the abode of Hazrat Shahbaz of Shah Jehan's time whose tomb lies on a hill to the west of the present railway station.

Madarasa Towns -

In the urban growth of these sacred towns^{of}, the Muslim age, Madrasas (Oriental colleges) and Khangahs (hostels) have also to a great extent played important role. The great modarris (teacher) of such colleges were the sufis and sajjada nashins of the dargah themselves for they were in most cases saints and scholars at the same time. Thus most of the sacred towns were also seats of great oriental learning as well. The most famous college, however, was the 'Madrasa-i-Saif' founded at Patna to the west of Sher Shah's fort in 1629 by Saif Khan, Aurangzeb's Governor in Bihar. Haibut Jung, the Deputy Governor of Bihar during Ali Vardi Khan's Mizanat added a library to it. According

112. Shah Juman is said to have killed Hilsa Deo, the Hindu Magician there.

to Abul Fazl every student was expected to read books in morals, arithmetic, notation peculiar to Arithmetic, agriculture, mensuration, geometry, astronomy, medicine, logic, the tabii (physical), riyazi (mathematical), ilahi (divine), science and history. It is said that no less than 400 students were always on roll in this college. Its principal was regarded as an authority in Muslim law till even later times.

Phulwarisharif was also an important centre, where the Mojibia library still contains thousands of books including rare manuscript of the Muslim period. Though the medieval grandeur and glamour have all declined, Phulwari has produced many intellectuals.

Biharsharif, as provincial seat during Delhi Sultanate was also a notable institutional centre - Qazi Ziaullah of Mir Dad Oriental College of Biharsharif along with the Sheikh is said to have tutored Prince Azizuddin (later Alamgir II).

'Makhdum Sharfuddin', writes Abul Fazl in Ain-i-Akbari, 'left many works and amongst them his writing on the mortification of the spirit was in use during Akbar's time as exercises'.

Similarly Darbhanga in North Bihar, and Bhagalpur and Barh in South Bihar were other centres.

113. Divakar, R.R. - Bihar through the Ages, (Calcutta 1958) page 541

114. Ali M. Shad, Tarikh-i-Bihar (Patna 1901) page 110

115. Divakar, R.R. - Bihar through the Ages (Calcutta 1958) page 494

116. Shah Aun - 'Al-Ijceb' 'Urdu monthly' December 1964
(Phulwarisharif 1964) page 6

117. Abul Fazl - Ain-i-Akbari, (Jerret) Vol. 3, (Calcutta 1873)
page 411.

Hindu Worship Towns -

Like Muslim mysticism, Hinduism too governed the life of a bulk of population in Bihar Plain during the Muslim period. Although Buddhism and Jainism had all disappeared as effective force of faith, Hinduism specially on account of popularizing effect of Sonkaracharya in the 9th century and Ramanuj and other Bhaktas in the 11th and 12th centuries had a distinct position. Indeed Ramanand's sincere effort led to the creation of two distinct schools of thought -- One of T ulsi Das, a contemporary of Emperor Akbar who enriched Hinduism by popularising the cult of Rama and the other of Kabir, Nanak Rai Das of Arrah, etc. who preached strict monotheism and refused to acknowledge gods and demi-gods and denounced caste system. Tirhut as a whole in the north and Bhojpur and Dumraon and Gaya towns in the south thus formed the main nuclei for discourse by these Bhaktas. On minute, observations again there appears two distinct types of temples in this region -- the Saivites and the Vaishnavites. The Math at Gaya, the temple at Baikunthpur (Khusmupur), the temple at Bazidpur in Darbhanga district, the Kuleswar and Singheswar temples are all Saivites and these saivite temples were more numerous and common than vaishnavites for Shiva was the god of all classes of people. The Vaishnavite temple were only a few owing specially to many restrictions. The Vishnupad temple at Gaya was however, a notable

118. Diwakar, R.R. - Bihar through the Ages - (Calcutta 1958)
page 519.

place of worship. But the worship of the two appeared on some occasion interchangeable and people were not dogmatic about their religion. This was well illustrated by Harihar Kshetra temple at Hajipur-Sonepur which involved worship of both Vishnu and Shiva and has caused in recent years the creation of the largest railway platform in India.

Towns Associated with the Economic Activity of the Region

Manufacturing Towns -

Apart from the political and religious associations some towns were pre-eminently important centres of manufacturing. The urban aspect of such towns is derived from the accounts of travellers like Abdul Latif, Hughes, Parkar, John Marshal, Tavernier and Bernier, who traversed the region from time to time (Appendix 11). The whole area from Patna to Mokamah as told by these travellers was fairly prosperous with respect to manufacturing of textiles both silk and cotton, jasmine oil, paper and fine earthen wares. Tassar Silk was then imported in Bihar from the Lakhnauti and Bur Bakabad Sarkar areas of Bengal province. Patna, Fatuha, Baikunthpur (near Kusrupur) Qadirganj to the east of Naubat (Ilavada) and Buniadganj near Arwal were important towns of silk manufacturing. It is pointed out that cotton was extensively grown in Patna and Maubampur area during Shah Jahan's time. Indeed the localities round Patna within a radius of nearly 30 miles were important centres of cotton manufacture. Lakhewar, Nundapur and Biharsharif were important

centres where fine shirting, wrapper, thick calico, muslin, dopattas (orhanis) and caps were manufactured. Biharsharif was specially noted for the manufacture of good variety of muslin, while Patna was the chief centre for the production of Newar-tapes, daris and embroidery works of Kamdani etc.

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Barh was noted for the production of Chameli oil while Arwal, Biharsharif, Sahar and Hariharpur (near Nasriganj) were notable centres of paper manufacture. The Kaghzi mohalla or paper quarter of Arwal was once famous throughout Bihar rivalling in some respect even the larger manufactures such as at Sahar and Biharsharif. This mohalla at Arwal was humming with prosperous paper dealers and large quantities of hand-made paper were exported down the Son to Muner and then by way of the Ganga to places in Bengal or upstream to Banaras and Mirzapur. In the village Sipah alone some 400 families were employed in this manufacture.

The region to the north of the Ganga facing Patna, besides being noted for the manufacture of potteries and finer earthen goods were essentially an important section for the saltpetre refineries. Hajipur as an important city dominated the whole region while Chapra as described by Travernier was a great qasba (big village) where Dutch, Portuguese and French had their salt-petre refined. Chapra and Hajipur were the principal refineries of Saltpetre in the whole of Bihar. Other centres in North

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119. O'malley, L.S.S. - B.D.G.- Patna (Patna 1924) page 199.

120. Sarkar, J.B. - Patna and its environs in the 17th century-
J.B.R.S. 1948 (Patna 1948) page 132.

were Aliganj (Siwan) in Saran and Begusarai in Monghyr north, both were centres of fine earthenware.

Trading or market Towns -

Based on the varied manufacturing and industrial activities of the region, Patna, Barh, Monghyr, Bhagalpur, Gandah Gola (Karagola in Purnea) and Rajmahal grew considerably on account of their river bound trades of the commodities manufactured in the immediate vicinity of each. Patna for example was an important trade mart and commercial centre. It was called 'Pattana' meaning the mart, a name indicating its commercial importance. It was then the principal centre for the collection of salt-petre which was sent to 'Hugli' in large flat bottomed and exceedingly strong vessels called 'Patellas' each carrying 4,000 to 6,000 maunds. Hugli, Balasore and Pipli were thus the chief sea-ports for Patna market. Municci in 1663 found the city of Patna to be the centre of manufacturing of bottles and fine earthen pottery including cups of clay finer than glass, lighter than paper and highly scented. Patna was actually noted for the meeting place of merchants of different nationalities, so that it was the centre of both provincial and international trade.

Throughout the Muslim period and till the establishment of British rule, Monghyr because of its strategic river route location and having the central location in the plain, was an important trade mart, its main trade being in items of delicate and superb crafts-manship in jewellery, stone cutting and fire-arms (guns and pistols).

Hajipur too specially before the development and rise of Patna (after 1541) on account of its command of water in three directions was a place of considerable commercial importance. The traveller's accounts give us a good idea that the northern environs about Hajipur was specially noted for potteries, fine earthenware, bangles, sweets, mats of chemically softened elephant tusks, and salt-petre refineries. It was thus the Chief trade mart north of Ganga in the west as was Gandrah Gola to the east.

Barh was a great collecting centre having several store-houses and 'The road or the Sarai there' says John Marshall¹²¹ (1670), 'was neat and handsome; Fatuha again being located on the great Shahrah (royal highway) leading to Gaur or Rajmahal in the east and Azimabad in the west and also to Biharsharif in the south was a place of great commercial importance. Considerable trade in cotton and silken cloth was carried on here. John Marshall found Bhagalpur to be a market of bows and arrows and also of¹²² fine hubble-bubbles (Hugas) while Kahalgaoon (Golgong) was another town of commercial importance owing to its being easily accessible by river. It was then regarded as the market town of wooden sticks.

121. J.B.R.S. 1948 (Patna 1948) page 132.

122. Historically the place was noted as the site where Mohammad Shah, King of Bengal died in 1559.

Towards the east situated on the north bank of the Ganga river in Purnea district opposite Kahalgaon, Gandah Gola (Karagola) was probably the greatest trade mart in the eastern Bihar Plain. On the bank of the Ganga says Hussain Salim, author of Riaz-us-Salatin 'Gandah Gola was the resort of traders and mahajans from various places. Owing to the cheapness of the food-grains and comforts, land holders traveller and professional men came
123
from every part and dwelt there.'

123. Salim, G. H. - Riaz-us-Salatin translated by A. Salam
(Calcutta 1902) page 38.

TOWNS THAT WERE FOUNDED DURING THE BRITISH DAYS -

With the advent of the Company's dominance after the battle of Udhua Nala near Rajmahal in 1763 and of Buxar in 1764 the region as a whole and more specially the Ganga riparian tract entered into a new politic — economic order. Decay of imperial rule coincided with the growth of new towns. The absence of strong imperial power encouraged the growth of numerous principalities and their owners (Pathan chiefs and Hindu rajas) tried to strengthen and re-built their residential headquarters in their territories which grew into towns. This period saw, therefore, rapid expansion of and emergence of a number of new towns. But the British had at the same time much advanced in Bihar and they were carving out the territory into new administrative units for which headquarters were established. In this way a number of new administrative centres sprang up which were divisional, district or sub-divisional headquarters in the new political set-up. Motihari, Siwan, Madhubani, Sitamarhi, Begusarai in north Bihar and Bhabhua, Amranganabad, Jehanabad, Nawada, Bihar, Bhagalpur etc. in South Bihar were mostly either the new entrants or old entrants attaining new political and administrative significance.

Prior to the beginning of British rule in Bihar, the roads were few and neglected. Metalled roads existed only in large cities. Bridges on the rivers were also almost negligible. Although after the first land settlement some roads were constructed, these routes were still unsafe owing to the menace

of the dacoits. Rivers therefore continued to remain as the chief trade routes and the interest of the company thus led to the development of river-side marts like Bankpur, Chapra, Sahibganj, Lalganj (Singhia), etc. and indeed Patna flourished and became the main entrepot of river traffic in Bihar Plain.

With the assumption of control by the British crown in 1858 and the establishment of a more responsible Government, the construction of metalled roads progressed at a rapid pace. Although the influence of roads on the towns had begun to be felt in the first half of the 19th century, the difficulties encountered during mutiny brought the question of suitable means of transport to the forefront.¹²⁴ Soon after the mutiny the construction of metalled roads and more specially the railway lines progressed at a rapid rate.

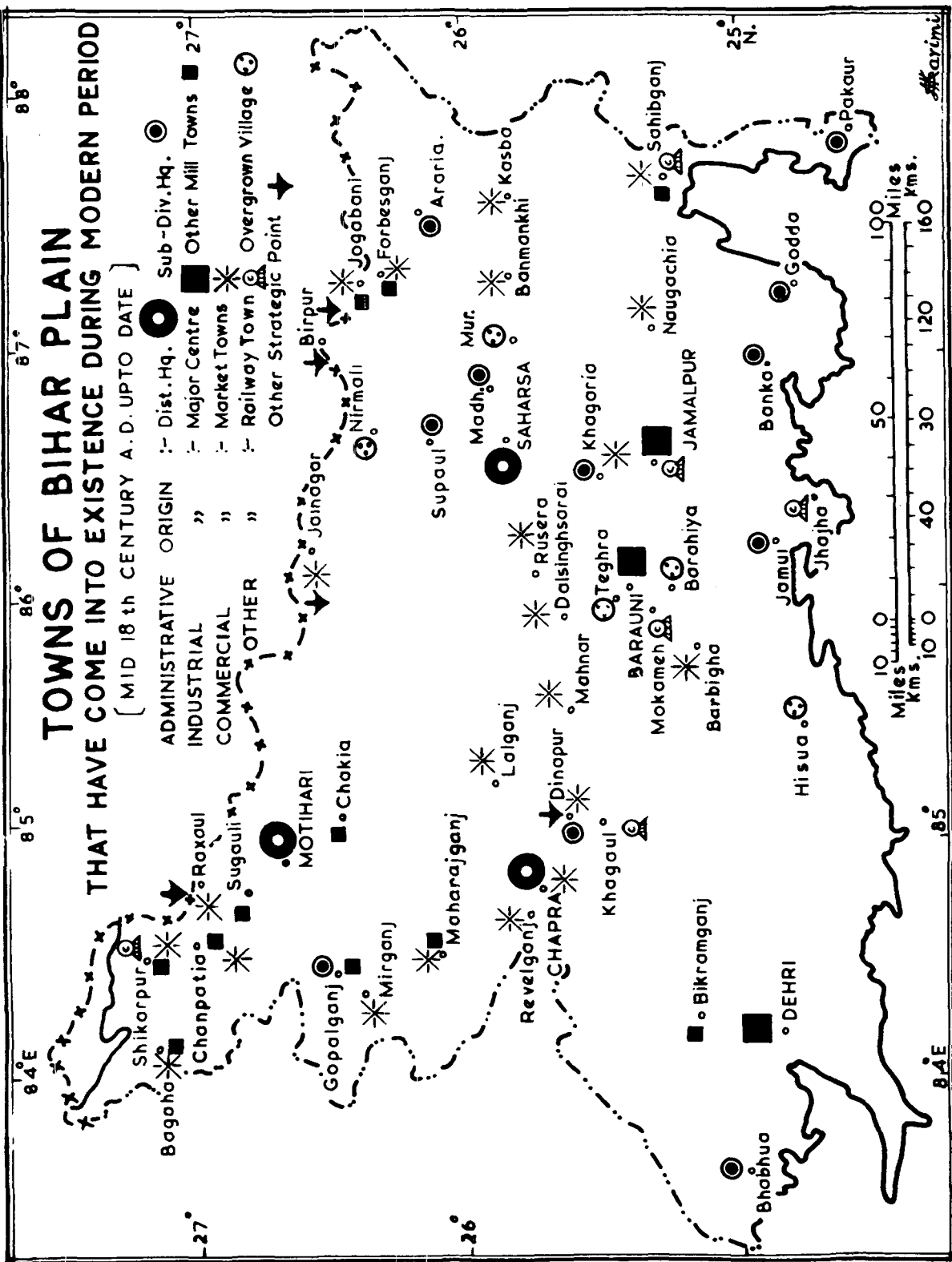
The construction of the new communication lines such as the metalled roads and the railway lines brought about a new equilibrium and re-orientation in the whole economic and commercial activity. The insecurity and slowness of water transport in comparison to roads and railways was bound to cause decline in river-borne trade. Most of the towns in this way shifted their commercial activities, from the river ghats to inner railway zones where usually a new nucleus was emerging in course of time partly because of commercial neglect and partly because of the shifting of the main channels of the once busy river fronts which were all deserted and lay in ruins. This was

124. Ahmad, E. - Origin and evolution of the towns of Uttar Pradesh-Geographical Outlook -Vol.I, No.1 (Ranchi 1956) page 54.

specially apparent in the case of Sahibganj, Bhagalpur, Monghyr and Barh, etc. Even in the case of Patna, although some commercial activity is still carried on along its river front at Patna city and Digha ghat, the major amount of its trade is carried by the main line of the Eastern Railway. Apart from these sectional shifts as regards commercial function in case of river-side towns from ghats to railway station area, a number of other interior urban centres emerged away from the big cities. The ease of movement of labours to bigger centres, the social contacts and above all easy availability of goods on account of railways all facilitated the origin and growth of a number of smaller towns along the railway lines. The formerly flourishing trade between Patna and Calcutta by way of the Ganga en route to Rajmahal^o was intercepted by the construction of the Sahibganj Loop line in 1851 and the main line in 1862. But though this had^{mi} diminished the value of the Ganga as an artery of traffic, Patna continued to be collecting and distributing centres for the country north of the river comprising the Tirhut Division and Gandak river even then continued to remain its main feeder. But the opening of the C.T. Railway (now N.E.R.) in 1881-1909 however deprived the city of Patna of almost the whole of its north Bihar trade except that of the narrow riparian tract while its importance was further reduced on account of the construction of several branch lines here and there.

The towns which became railway nodes at an early date have generally maintained a remarkable growth. Notable among

FIG. NO.35



these are Khagaul, Gaya, Mokameh, Iakhisarai (Kiul), Jamalpur and Sahibganj in South Bihar and Chapra, Samastipur, Khagaria and Katihar in the north. Some of these such as Katihar north of the Ganga and Gaya and Kiul in south Bihar are important railway junctions and have become the foci of a number of rail routes. A few of these railway towns were of special significance because of European Railway Settlement colonies and even to this date the railway colonies at Khagaul, Jamalpur, and Katihar are regarded as the most efficient railway settlement centres in Bihar. Plain and are provided with many modern urban amenities in them. A number of villages were also greatly influenced by these railways, so that a number of them in course of time were enlisted as urban centres in the various decennial counts. Notable among these are Colgong on the Sahibganj loop, Warisaliganj and Hisua on the south Bihar branch of Eastern Railway, Revelganj, Teghra, Begusarai and Khagaria on the main line of the N.E. Railway while Mirganj, Forbesganj, Sitamarhi and Champatia were other railway towns on other branch lines in North Bihar (Fig. 35).

The general prosperity of the region more specially due to the development of easy means of communication lines led to the rapid growth of both industrial and commercial activities in modern times and it will be correct to call some of these towns as old, some young, and some nascent, in view of the different stages of development and expansion of trade or industrial enterprises in them. Jamalpur close to southern outskirts of industrial Monghyr (Gun and Cigarette factories)

Samastipur in Darbhanga district, each with railway workshops and Muzaffarpur due to Messrs Arthur Butler and Company's work grew considerably and became notable industrial centres of the region. Bhagalpur gained importance as cottage-type silk weaving centre while Katihar, besides being the collecting centres of Jute and other commodities, developed also as a mill town. Sheikhpura which was an important dargah town during the time of Muslims, developed as an important centre for the manufacture of hookah-tubes.

The expansion of the mill towns in the drier western districts along the border of U.P. in North Bihar and in the western South Bihar was also equally remarkable and these were in most cases sugar mills centre. In this way Siwan, Champatia and Chakia in North Bihar and Masriganj, Dehri etc. in south Bihar sprang up as sugar mill towns. Siwan north of the Ganga and Dalmianagar (Dehri) in the Son valley in South Bihar are specially notable. Indeed Dalmianagar with a number of Rohtas mills such as of paper, cement, sugar, chemicals, etc. has become the hub of industrial activities in the entire region.

TOWNS THAT HAVE COME INTO EXISTENCE RECENTLY
IN THE POST INDEPENDENCE PERIOD.

Prior to independence, roads were constructed mainly from the administrative point of view and rather than that of regional and natural economic development. Their construction was mainly the concern of the District Board and was financed mainly from road cess collection. New constructions or extensions of the existing roads and construction of the bridges were very few and far between and on many occasions such as during the second world war (1939-45) the revenue of the District Board was diverted towards military expenditure and the Government grant too dwindled down to the bare minimum and even that too was spent only on roads of strategic importance. Since independence, however the old Law and Order concept has been replaced by the idea of economic development and welfare of the society, so that the growth of metalled roads in charge of P.W.D. has been phenomenal since independence. The recent move of the 'Government of India, ¹²⁵ to take over the through routes classified as 'National Highways' in accordance with the National Highway Act of 1958, is a further step towards forging a gigantic unified force for national reconstruction and development of urbanization.

To the growing modern industrial towns a number of mill towns such as Baharajganj, Gopalganj, Bagaha, Shikarpur, Sugauli Razaul, Chakia, Sultanganj, etc. were added recently while Mehmar Dalsinghsarai, Haugachia, Kasba, Banmankhi, all in North Bihar are the new entrants of commercial significance. Jhajha in Kiul Plain

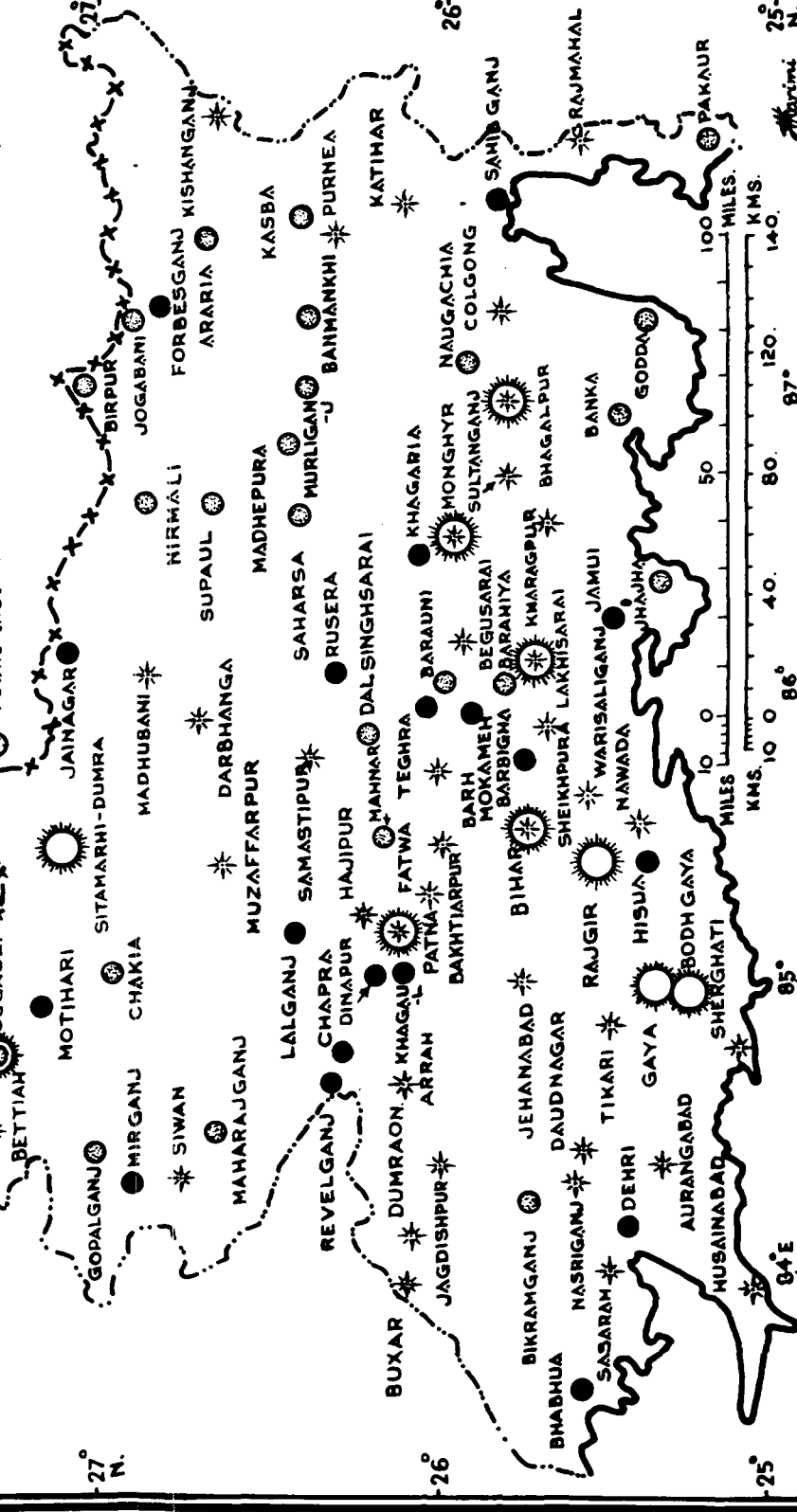
125. Sinha, D.K. 'National Highways and World Bank Credit in Bihar' Indian Road Congress Supplement. Indian Nation Dec. 14 (Patna 1961).

of South Bihar has very recently originated as a railway town where the necessary change over with respect to engines and crew are made and the place is at the same time an important centre for the manufacture of biri which gives employment to several thousand people residing in and around the town of Jhajha. Along the border of Nepal a number of towns have grown up as saw mill centres. Shikarpur (Markatiaganj) in the West and Jogabani in Furnea facing Biratnagar in Nepal and close to the new township of Birpur are notable manufacturing towns of saw machine installations with allied softwood utilization industries such as a match factory and a toy manufacturing centre. Indeed Jogabani is the best toy and match centre in the whole of Bihar Plain today.

It is hoped that the various multipurpose or individual projects like Gandak, Kosi, etc. projects or other road or bridge development schemes will certainly usher in a revolutionary change with respect to urbanization specially in north Bihar. The completion of road bridge across the Son on the G.T.road is bound to enhance the importance of Dehri (Dalmianagar) and Sasaram as urban centres while the completion of the rail-cum-road bridge (Rajendra Pul) over the Ganga near Mokameh in 1959 has already brought about a new change. The two portions of Bihar Plain namely North Bihar and South Bihar have been brought closer together by the completion of this project. Barauni and its environs will soon be much urbanized withⁱⁿ a decade or so. The oil refinery and a thermal plant has already initiated urban landscape

Origin & Evolution of Towns IN BIHAR PLAIN

- Ancient Towns having old-age associations
- Late Medieval Towns founded during Muslims
- Modern Towns founded during British-Days
- Towns that have come into existence after Independence



SOURCE :- THIS MAP IS PREPARED ON THE BASIS OF HISTORICAL & GEOGRAPHICAL ACCOUNTS.

to the region. Again the construction of the two right and left Kosi embankments each 130 Kms.(75 miles) in length and about 12 to 16 Kms.(3 to 10 miles) apart, have resulted in the emergence of no less than 6 towns in the newly created Saharsa district¹²⁶ where none existed in 1961.

The other move which appears apparent these days is the revival of old historic sites such as Nalanda, which was the centre of Buddhist learning, Vaisali the birth place of Lord Mahavira and the principal seat of Lichchavi clan of Vaisali republic, Bodhi Gaya, where Buddha got enlightenment and is a place noted for Bodhi tree and the Bodhi temple, Rajgir, reminding of Girivraja or Rajagriha, the capital city of Magadh during Bimbisara, Kharagaur the principal seat of Raja Sangram Singh and headquarters of Nawab Roz Afzun; and Pawa where Lord Mahavira attained his Nirvana (Salvation) etc. Although Vaisali, Pawa and Nalanda have not yet been enlisted as towns these may emerge once again as important urban centres in near future.

A consolidated picture of all the urban centres with respect to their origin and growth, is best outlined in Fig.36.

126. Northern Section of old Bhagalpur district which has been constituted in a new district.

Chapter Four
**Trend of Modern Urban Growth
&
Distribution of Towns**

CHAPTER FOUR

TREND OF MODERN URBAN GROWTH & DI TRIBUTION OF TOWNS

A brief review of the past decades
(till 1951) as regards urban popula-
tion, & distribution of towns -

In considering whether a particular area should be treated as urban or rural, the number and character of its inhabitants, the relative density of its dwellings, its importance as a trade centre, its historical associations should be taken into account. But no definite criteria were, however, laid down in the early British period. The numerical test ordinarily applied then was to designate a place as urban if it had a population of not less than 5,000 persons, but even this rule in the region was not invariable.

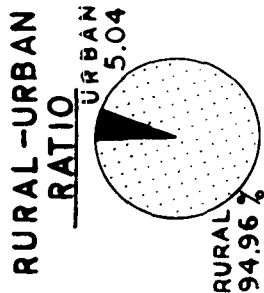
Condition in 1872 :-

The first published data available for the region¹ (Bihar Plain) is for 1872 . In that year about 9 lakh people comprising 5.04% of the total population of Bihar Plain were dwelling in towns. The Bihar Plain then appears to contain 38 towns of various orders. Of these only one namely, Patna (Population 1,58,900) located in the heart of west Central plain on the southern bank of the Ganga constituting 17.67% of the

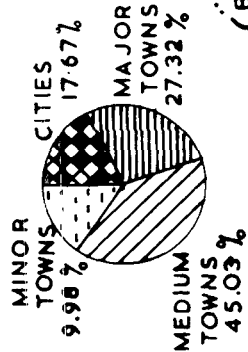
1. Beverly, H. - Report on the Census of Bengal, 1872
(Calcutta 1873), page 115.

FIG. NO. 37

Cities & Towns of Bihar - 1872

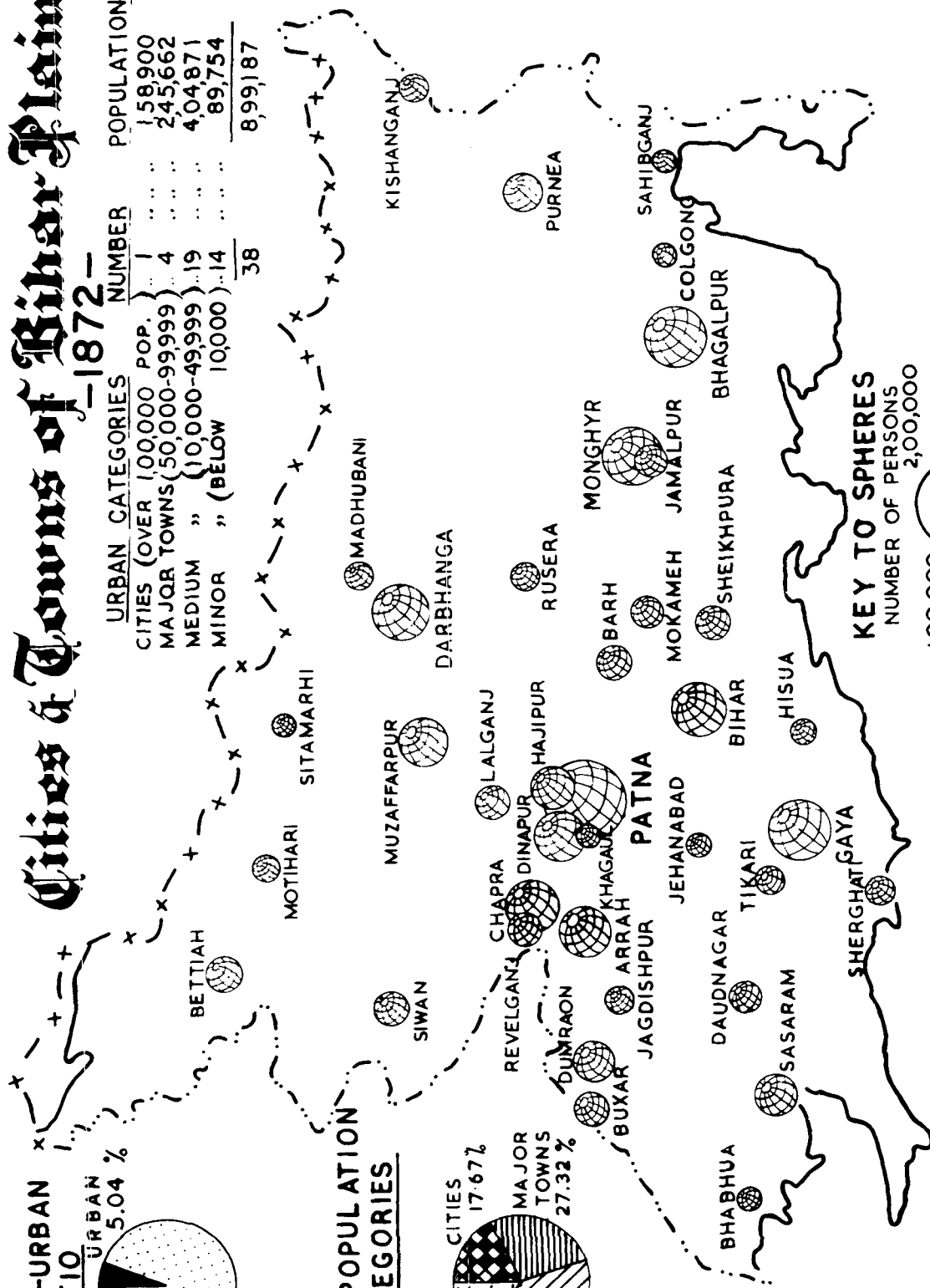


URBAN POPULATION BY CATEGORIES



URBAN CATEGORIES		POPULATION	
CITIES (OVER 1,00,000 POP.)	1	158,900	
MAJOR TOWNS (50,000-99,999)	4	245,662	
MEDIUM " (10,000-49,999)	19	4,04,871	
MINOR " (BELOW 10,000)	14	89,754	
	38	8,99,187	

KEY TO SPHERES



SOURCE :- BAVERLY, H.- REPORT ON THE CENSUS OF BENGAL 1872.

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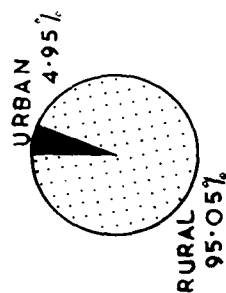
urban population was designated as city in the entire region. Gaya (66,843), Bhagalpur (65,377), Monghyr (59,698) in South Bihar and Darbhanga (53,744) in the interior north Bihar Plain were, however, the four major towns and together these constituted 27.32% of the urban population in 1872 (Appendix 5). In the medium sized class III and Class IV urban categories were 12 and 11 towns respectively, scattered throughout the southern plain though a few of them were also found north of the Ganga specially in the western districts (Fig.37). 45.03 % of urban population was jointly shared by them. Jahanabad and Sahibganj in South Bihar and Sitamarhi in Muzaffarpur district of North Bihar were Class VI towns having less than 5,000 persons. It is also important to note that out of 38 towns of the entire region, 24 towns containing 636,205 people, comprising 70.8% of the entire population of the region, were in South Bihar and of these 18 towns (or 47%) were located in Patna division while only 14 towns with 262,982 people comprising 29.2% of the total urban population of the region lay to the north of the Ganga mostly in the Tirhut Division of the North Bihar Plain. (Appendix).

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2. For the sake of geographical analysis the six census categories of town here have been re-grouped as follows :-
- (a) city (Class I town)- having population 1,00,000 and over,
 - (b) major town (Class II Census town) with population - 50,000 - 99,999.
 - (c) Medium-sized towns (Class III (20,000-49,999) & Class IV (10,000-19,999) and
 - (d) Minor towns (i.e. Class V towns (Population 3,000-9,999) and class VI towns with population less than 5,000).

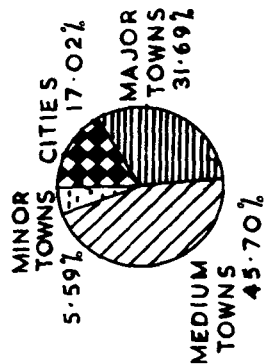
Cities & Towns of Bihar Plain

-1881-

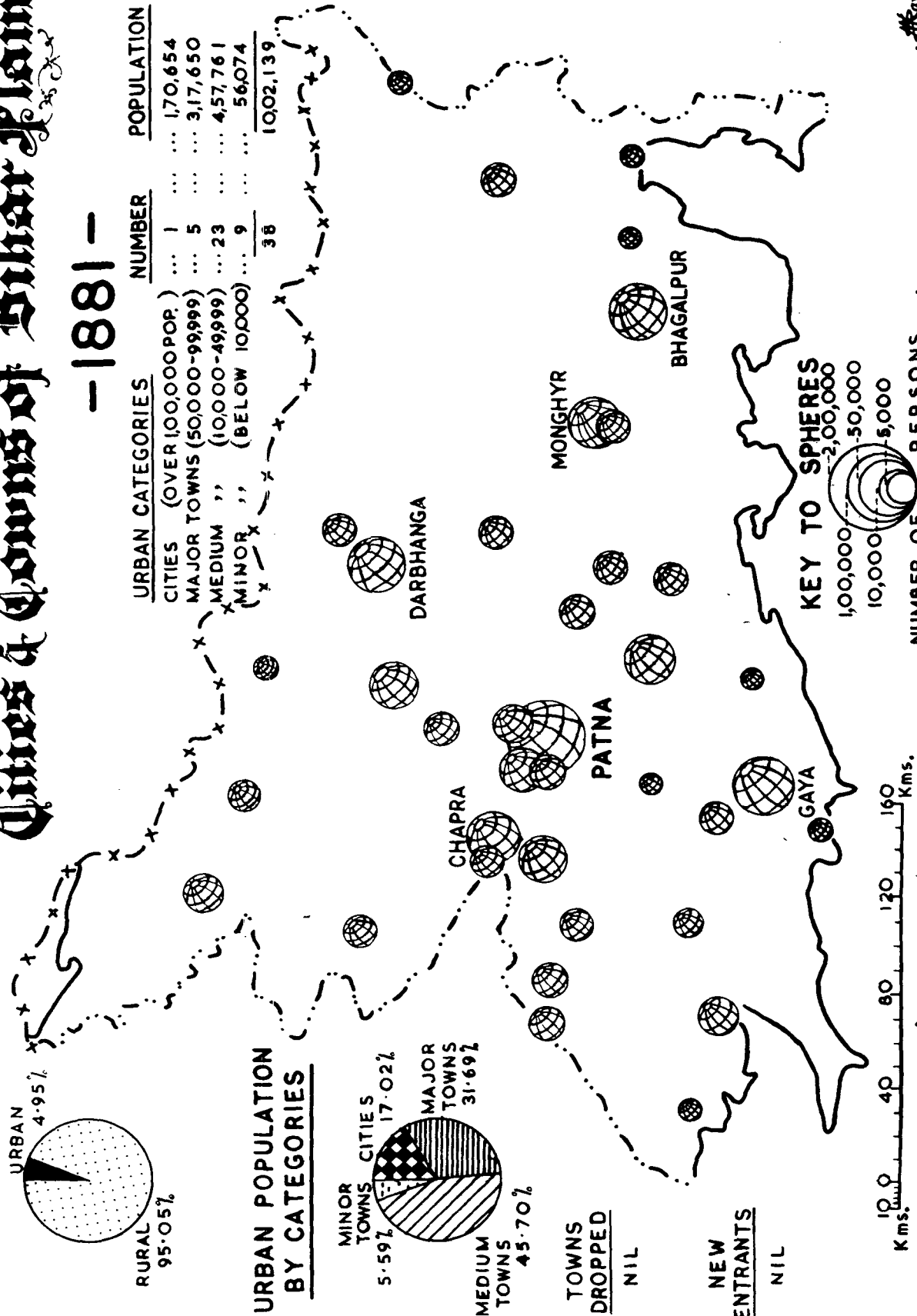
RURAL-URBAN RATIO



URBAN POPULATION BY CATEGORIES



URBAN CATEGORIES		NUMBER	POPULATION
CITIES (OVER 1,00,000 POP.)	...	1	1,70,654
MAJOR TOWNS (50,000-99,999)	...	5	3,17,650
MEDIUM " (10,000-49,999)	...	23	4,57,761
MINOR " (BELOW 10,000)	...	9	56,074
		38	10,02,139



1872-1881

The conditions till 1881 were almost the same and there was no addition to the total number of towns except that there was some change in the status of certain towns. But there was a slight increase of 11.44% in the total urban population so that it rose from 9 lakhs in 1872 to 10 lakhs in 1881 (Fig.38). Every town, as a matter of fact, showed slight increase in population. Apart from the city of Patna (population 170,654), there were now 5 major towns instead of 4 in 1872. Chapra town changed from category III to II. Similarly Bettiah which was a class IV town in 1872 was now a Class III town. Six of the other towns of Class V, namely Khagaul, Tikari, Jagdishpur, Motihari, Rusera and Madhubani were on account of decennial increase in population promoted to Class IV category while three towns, namely Sitamarhi, Sahibganj and Jahanabad that had less than 5,000 population in 1872 had now all crossed the limit of the least counts. The total number, however remained the same, there being no change with respect to their distribution.

1881-1891

It is important to note that in the preliminary stage of population enumeration, the distinction specially for smaller towns was rather vague and no definite criteria was fixed for it and the matter was left, entirely at the discretion of individual Census Superintendent. As a result of this there was marked

3. Bourdillon, J.A.- Report on the Census of 1881, Vol. I
(Calcutta 1883), page 31.

4. Prasad, S. D. - Census of India 1961, Vol. 4, Bihar, Part IIA.
(Patna 1963) page 10.

variation even within a state from one Census to another. The figures for 1881 and 1891 can be good example to indicate how they are misleading. This is apparent when we look at the figure for the State as a whole. In 1881 every place with a population of 5,000 persons or more was treated as a town, whether it had any urban characteristics or not. As a result, the number of towns in that year was very high particularly in minor Class V (5,000-9,999 inhabitants) amounting to about 14 for Bihar State and 9 for Bihar Plain. Ten years later in 1891, the Census authorities declared that no place would be treated urban unless it was under municipal limits. The total numbers of towns straightway dropped from 51 to 44 in Bihar State and even for Bihar Plain it dropped from 38 to 32, the whole difference being accounted for by class V towns, which dropped from 14 to 8

		<u>1881</u>		<u>1891</u>		
	No. of towns	Population in lakhs.	% of total urban population.	No. of Towns.	Population in lakhs	% of total urban population.
S. Bihar	24	6.92	69.11	18	6.58	65.90
N. Bihar	14	3.10	30.89	14	3.41	34.16
Bihar Plain	38	10.02		32	9.99	

5. Fawcett 'Witther Population' Geography 1937 (London) page 14.

for the State of Bihar and from 9 to 4 in the Bihar Plain

<u>Urban Categories</u>	1872	1881	1891	1901	1911	1921
Cities Class I (Over 1,00,000)	1	1	1	1	1	1
Major Class II Cities (50,000-99,999)	4	5	5	3	2	3
Medium Class III Towns (20,000-49,999)	7	7	7	9	10	9
Class IV (10,000-19,999)	12	16	15	14	13	14
Minor Class V Towns (5,000-9,999)	11	9	4	15	16	16
Class VI (below 5,000)	3			3	2	5
TOTAL	38	38	32	45	45	48

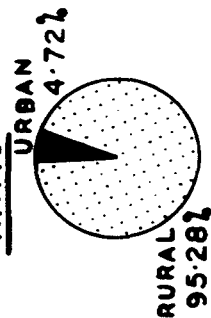
The fall in the number of towns was particularly marked for South Bihar Section especially in Patna and Gaya districts

District	No. of towns	<u>1881</u> Population in lakh	No. of towns	<u>1891</u> Popula- tion in lakh	Towns elimina- ted
Patna	6	2.99	4	2.70	Hokameh, Khagaul
Gaya	6	1.15	3	1.02	Sherghati, Hisua Jahanabad
Monghyr South	3	0.81	2	0.75	Sheikhpura

The great disparity in case of the two units of the Bihar Plain that was so apparent in 1872 or 1881 was more or less equalised by this change in 1891 so that 14 towns with a total urban population of 341,322 comprising 34.1% of the total population were found in North Bihar while 18 towns with 658,376 people

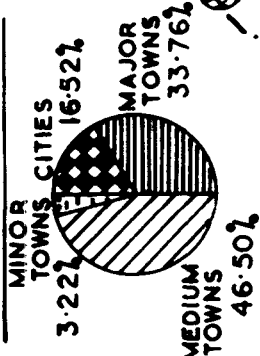
Cities & Towns of Bihar 1891

RURAL-URBAN RATIO



URBAN CATEGORIES		NUMBER	POPULATION
CITIES (OVER 1,00,000 POP.)	1	1	1,65,192
MAJOR TOWNS (50,000-99,999)	5	5	3,37,479
MEDIUM TOWNS (10,000-49,999)	22	22	4,64,850
MINOR TOWNS (BELOW 10,000)	4	4	32,177
		32	9,99,698

URBAN POPULATION BY CATEGORIES



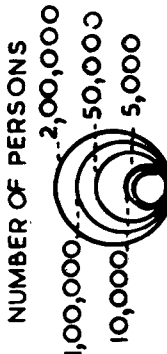
TOWNS DROPPED

1. KHAGAUL
2. MOKAMEH
3. SHEIKHPURA
4. SHERGHATI
5. JEHANABAD
6. HISUA

NEW ENTRANTS

NIL

KEY TO SPHERES



Kms. 0 40 80 120 160

Marini

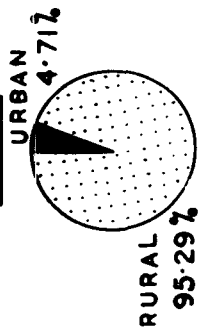
comprising 65.9% of the total for the entire region were to the south of the Ganga river (Appendix). The old towns declassified in 1891 were Mokameh and Khagaul in Patna district and Sherghati, Hisua and Jahanabad in Gaya district and Sheikhpura in Monghyr district (Fig.39).

1891-1901

In 1901 however a standard definition of town was laid down which showed that urban status was given to (1) all municipalities, (2) all civil lines not included within municipal limits (3) all cantonments and (4) all other continuous collection of houses inhabited by at least 5,000 persons which the local Census authority then decided to treat as town. This last item of the definition was again the cause of great differences in interpretation since 1901. However on the basis of these, it appears that there were 45 towns in Bihar Plain. There was marked increase again in the case of minor towns of Class V so that the figure again rose from 4 to 15 while three minor towns of Class VI category namely Phulwari (3415), Aurangabad (4,685) and Sherghati (2,641) which were dropped from the list in 1891 were again enlisted as urban. The other new entrants were Khagaria, Mokameh and Sheikhpura (which were dropped in 1891) as Class IV as medium towns and Mirganj, Samastipur, Katihar, Nawada for the first time and Khagaul, Hisua and Jahanabad (which were dropped

6. Mukherjee, S. V. - Census of India, 1931, Vol. 19
(Baroda) Part I, page 65.

RURAL-URBAN
RATIO

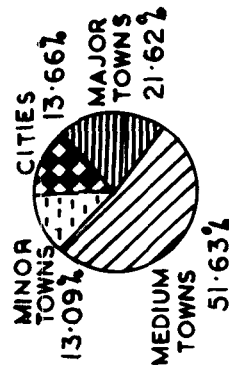


Cities & Towns of Bihar - 1901-

-1901-

URBAN CATEGORIES	NUMBER	POPULATION
CITIES (OVER 1,00,000 POP.)	1	1,34,785
MAJOR TOWNS (50,000-99,999)	3	2,13,292
MEDIUM TOWNS (10,000-49,999)	23	5,09,323
MINOR TOWNS (BELOW 10,000)	18	1,29,168
	45	9,86,568

URBAN POPULATION
BY CATEGORIES



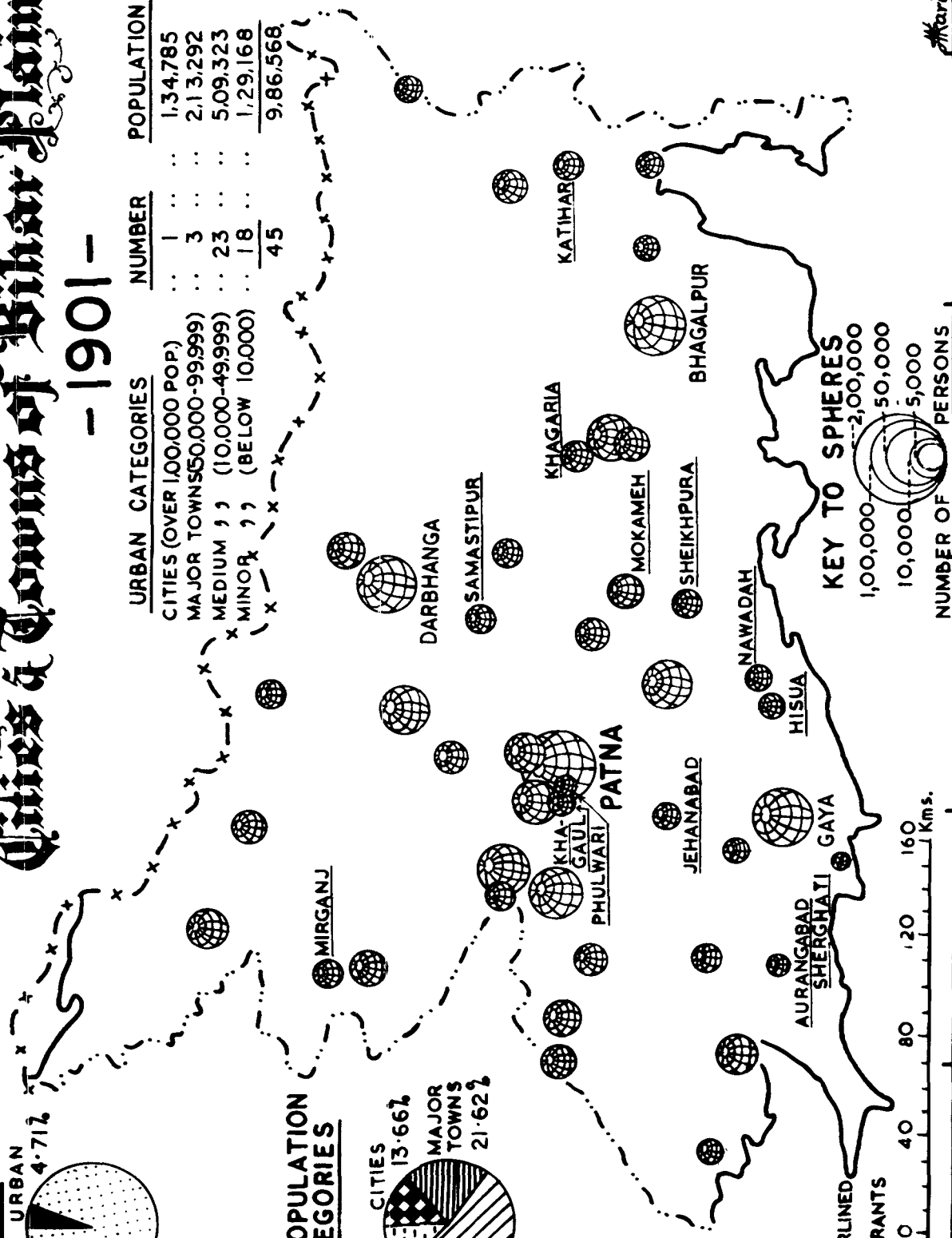
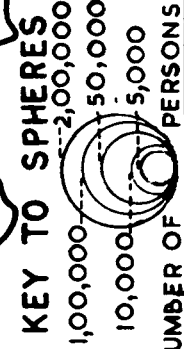
TOWNS
DROPPED

NIL

NEW

ENTRANTS

TOWNS UNDERLINED
ARE NEW ENTRANTS



SOURCE :- GAIT, E.A. - CENSUS OF INDIA REPORT 1901, VOL. 6A-BENGAL, PART II, IMPERIAL TABLES.

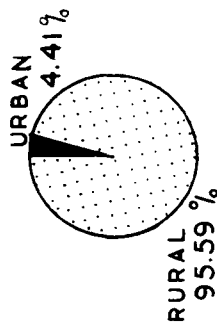
FIG. NO. 40

in 1891) in Class V (of minor towns) categories (Fig.40). Although the total urban population decreased only slightly from 10 lakhs in 1891 to 9.87 lakhs in 1901, there was a definite and sharp decrease of population in almost all the towns of the region except in the case of Sasaram in Shahabad district, Bhagalpur and Colgong in the Bhagalpur district, Motihari and Bettiah in Champaran district, Sitamarhi in Muzaffarpur district and Madhubani in Darbhanga district. The Plain of Bihar during the decade 1891-1901 was subject to epidemic of plague and cholera etc., which had a paralysing effect in the entire region. The prevalence of plague and cholera epidemic was responsible for the decline or stagnation in the majority of the towns. The panic caused by the plague in certain towns was responsible for a large exodus from those towns. Out of 48 towns of the region, no less than 28 towns showed decline in their growth. The deadly scourge was, however particularly severe in the case of Dinapur, Tikari, Bhabua, Jamalpur Monghyr and Sahibganj in South Bihar where the population decreased by 20% and Chapra, Revelganj, and Muzaffarpur in North Bihar where the population decreased by about 20% over the figure of 1891 Census. The greatest decennial percentage decline was in case of Tikari and Bhabhua each having a fall of 44%. The decline in the case of Patna was also noticeable when the population dropped from 165,192 to 154,785 giving a decrease of 19%, while in Dinapur and Chapra too the decrease was appreciable. In the former the figure dropped from 44,419 to 33,699 (24%) while in the latter the population decreased from 57,352 to 45,901 or

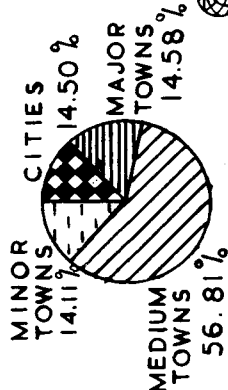
Cities & Towns of Bihar Plain

-1911-

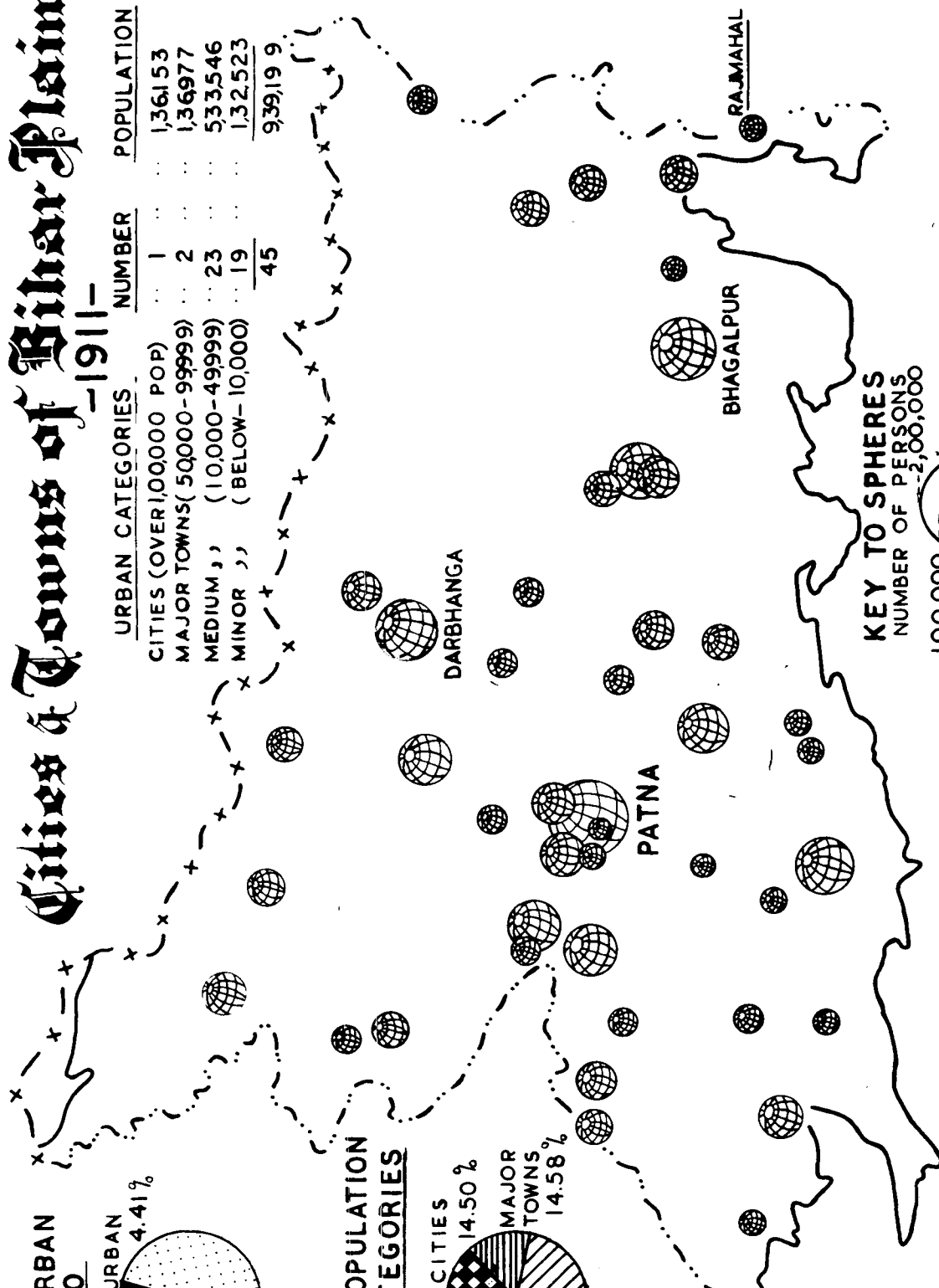
RURAL-URBAN
RATIO



URBAN POPULATION
BY CATEGORIES



URBAN CATEGORIES	NUMBER	POPULATION
CITIES (OVER 1,00,000 POP)	1	1,36,153
MAJOR TOWNS (50,000-99,999)	2	1,36,977
MEDIUM,, (10,000-49,999)	23	53,35,46
MINOR,, (BELOW-10,000)	19	1,32,523
	45	9,39,199



KEY TO SPHERES
NUMBER OF PERSONS

1,00,000-2,00,000

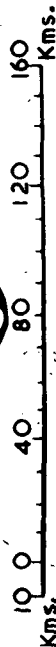
50,000-1,00,000

10,000-50,000

5,000-10,000

TOWN
DROPPED
I. SHERGHATI

NEW
ENTRANT
I. RAJMAHAL
(TOWN UNDERLINED)



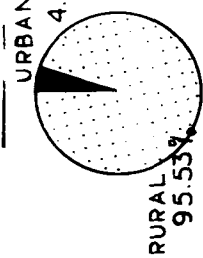
Marini

20%. Chapra and Monghyr which were major towns of Class II category in 1891 decayed to be placed only as medium (Class IV) towns in 1901.

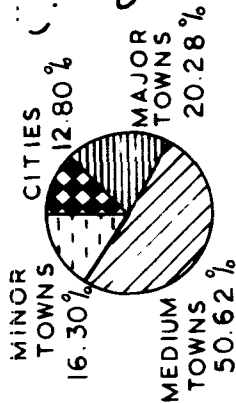
1901-1911

The epidemics of plague and cholera etc. in Bihar Plain were not all over even as late as 1911; so that the towns continued to show decrease, although the decrease was not as serious as in 1901. Sherghati which was included in the list of towns in 1901 was now dropped though Rajmahal as Class V town was a new entrant so that the total number of towns remained the same. But there was a total loss of slightly less than half lakh of urban population from 9.87 lakh to 9.39 (Fig.41). Out of 45 towns 28 towns showed decline in their growth, the greatest decrease being in Barh, Bihar, Khagaul, Gaya, Jahanabad, Jagdishpur and Colgong in South Bihar and Siwan and Lalganj in North Bihar where the percent decennial decrease every where was above 20%. Arrah town also showed a loss of 16.5%. The great loss in Gaya (more than twenty thousands) was specially because of the large exodus of people who left the town on account of plague, On account of these losses Gaya, Chapra and Monghyr deteriorated into medium (Class III) towns. But whereas in Shahabad and Saran districts all the towns showed loss, in Monghyr, Santhal Parganas and Purnea districts all towns except Monghyr and Kishanganj showed increase in population; Bettiah and Motihari in Champaran and a few other towns in Patna, Gaya etc. also showed slight improvement.

RURAL-URBAN RATIO



URBAN POPULATION BY CATEGORIES



TOWNS DROPPED

1. MIRGANJ
2. PHULWARI

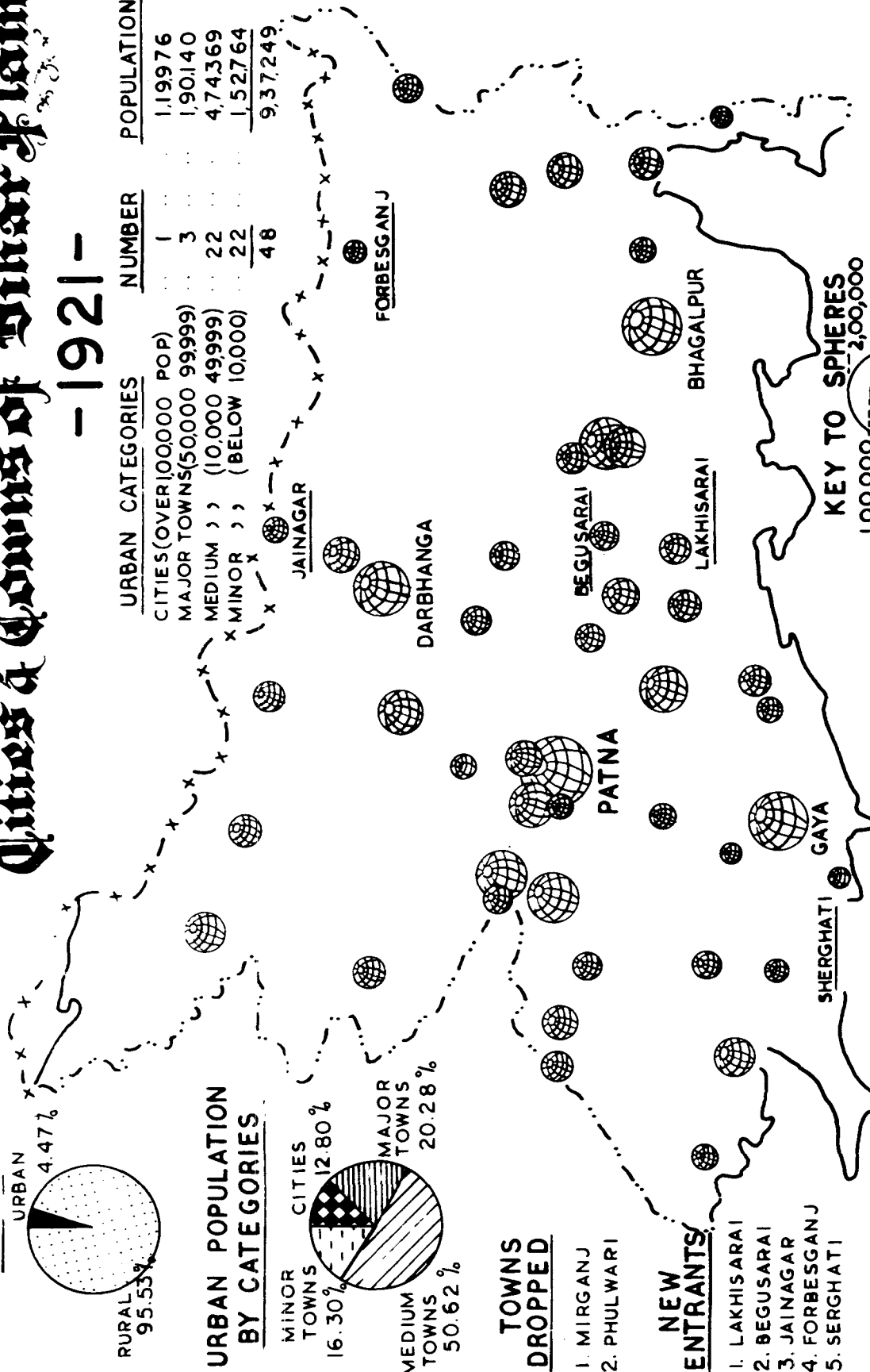
NEW ENTRANTS

1. LAKHISARAI
2. BEGUSARAI
3. JAINAGAR
4. FORBESGANJ
5. SERGHATI

(TOWNS UNDERLINED
ARE NEW ENTRANTS)

Cities & Towns of Bihar Plain -1921-

URBAN CATEGORIES	NUMBER	POPULATION
CITIES (OVER 1,00,000 POP)	1	1,19,976
MAJOR TOWNS (50,000 99,999)	3	1,90,140
MEDIUM >> (10,000 49,999)	22	4,74,369
MINOR >> (BELOW 10,000)	22	1,52,764
	48	9,37,249



NUMBER OF PERSONS

Harini

1911 - 1921

The total number of towns in 1921 was 48 ; two of the towns, namely Mirganj in Saran and Phulwari in Patna district, were eliminated while 5 of the towns, one of Class IV (Lakhisarai) and two of Class V (Jainagar and Begusarai) and two of Class VI (namely Sherghati and Forbesganj) were the new entrants (Fig.42). Exclusion of Mirganj and Phulwari was primarily on account of their predominantly agricultural interests. Forbesganj in Purnea and Jainagar in Darbhanga emerged as centres of transfrontier trade with Nepal, the importance of which increased since then. Begusarai was created a sub-divisional headquarters and was an important market town in Monghyr North, north of the Ganga, while Lakhisarai in Monghyr South at the junction of the loop and the main line of the Eastern Railway was a centre for the collection of food-grains which are even now despatched from there to Calcutta and the coalfield region to Bihar Plateau in the south for the distribution of such articles as Kerosene oil and cloth which Calcutta sent upcountry to South Bihar. Sherghati's inclusion was due to its lac market of some importance and a place of historical association.

The actual as well as the urban population both for Bihar State and the Bihar Plain showed decrease like the previous Census. The decrease in the case of urban population for the entire region was 0.21%. Except for Purnea, Monghyr North, and the region south of the Ganga, all the other districts showed decrease in urban population. The plague and influenza

of 1918 epidemic etc. was quite deadly all over the region. Most of the towns that started showing decreases since 1901 were still decreasing in population, while due to the shift of the centre of epidemic of specially influenza to north-east, other towns were also affected. Thus out of 48 towns of the entire region 28 towns showed decline in their growth, the greatest decennial decreases being in the case of Sahibganj (19.64%), Rajmahal (35.52%), Muzaffarpur (24.99%) and Lalganj (21.23%). Thus Rajmahal and Muzaffarpur in South and North Bihar respectively were the worst affected towns. Some of the other towns showing variation decline of 10 - 20 % were Tekari, Patna, Aurangabad, Hisua, Buxar in South Bihar and Hajipur, Darbhanga, Samastipur and Khagaria in North Bihar.

But inspite of the epidemic influence all over, most of the towns in western section of South Bihar were now free from plague, so that some of the loss in most of them was made good; Thus Dinapur, Bhabhua and Monghyr which showed considerable losses in 1901, appeared stationary in 1921, showing decrease of less than 1% in each case.

	<u>% Variation</u>		
	1901	1911	1921
Dinapur	-24%	-8%	-0.5%
Bhabhua	-45%	-4%	-0.3%
Monghyr	-37%	+30.8%	-0.2%

-
7. The mortality during the epidemic period which amounted in the Patna Division to 37,000 was exceeded in 1918 where there were over 63,000 deaths in Tirhut alone.- Owen, G.E.- 'Bihar & Orissa' in 1921 (Patna 1922) page 139; Lacey, W.G.- Census of India 1931 Vol. 7 Bihar & Orissa - Part I Report (Calcutta 1933) page 26, 27 and 75.

Apart from these no less than 14 towns showed slight increase in their population. These towns were Biharsharif; Mokamah, Khagaul, Gaya, Nawadah, Mahanabad, Arrah, Jamalpur, Sheikhpura in South Bihar and Chapra, Sitamarhi, Ladhuhani, Kishanganj and Katihar in North Bihar.

The growth of urban population in most of the towns in western Bihar was attributed to the fact that the centre of devastation caused by plague had probably shifted from South to North in the Muzaffarpur and Darbhanga district and to east in Bhagalpur and Santhal Parganas section. Besides Bihar and Orissa was constituted into a province separate from Bengal and Patna⁸ was its capital. Administratively the region had gained much importance. Patna itself became the home of many pretty traders and citizens. Patna thus showed a small decrease of 15,177 or 11.9% during 1911-1921. If the accession of population owing to the creation of New Capital be neglected the decrease amounted to 25,630 or 18.8%⁹. Biharsharif showed slight relief from the depressed condition of the plague. The increase in Mokamah and Khagaul were on account of their strategic position on the Eastern Railway, the former being railway centre and noted for its yards, while the latter as railway settlement and closely associated with Mokamah. Arrah and Gaya showed distinct recovery from the epidemic and much of the loss caused by the plague in

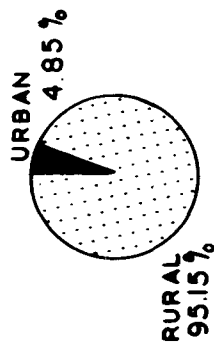
8. Bihar & Orissa unit was separated from Bengal in 1912.

9. Tallent, P.C.- Census of India, 1921, Report, Vol. I,
(Patna 1923) page 81.

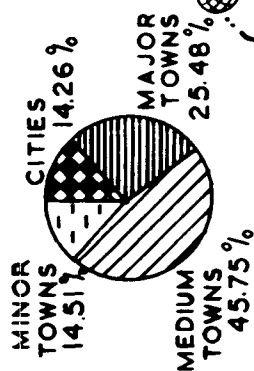
FIG. NO. 43

Cities & Towns of Bihar, 1931

RURAL - URBAN
RATIO



URBAN POPULATION
BY CATEGORIES



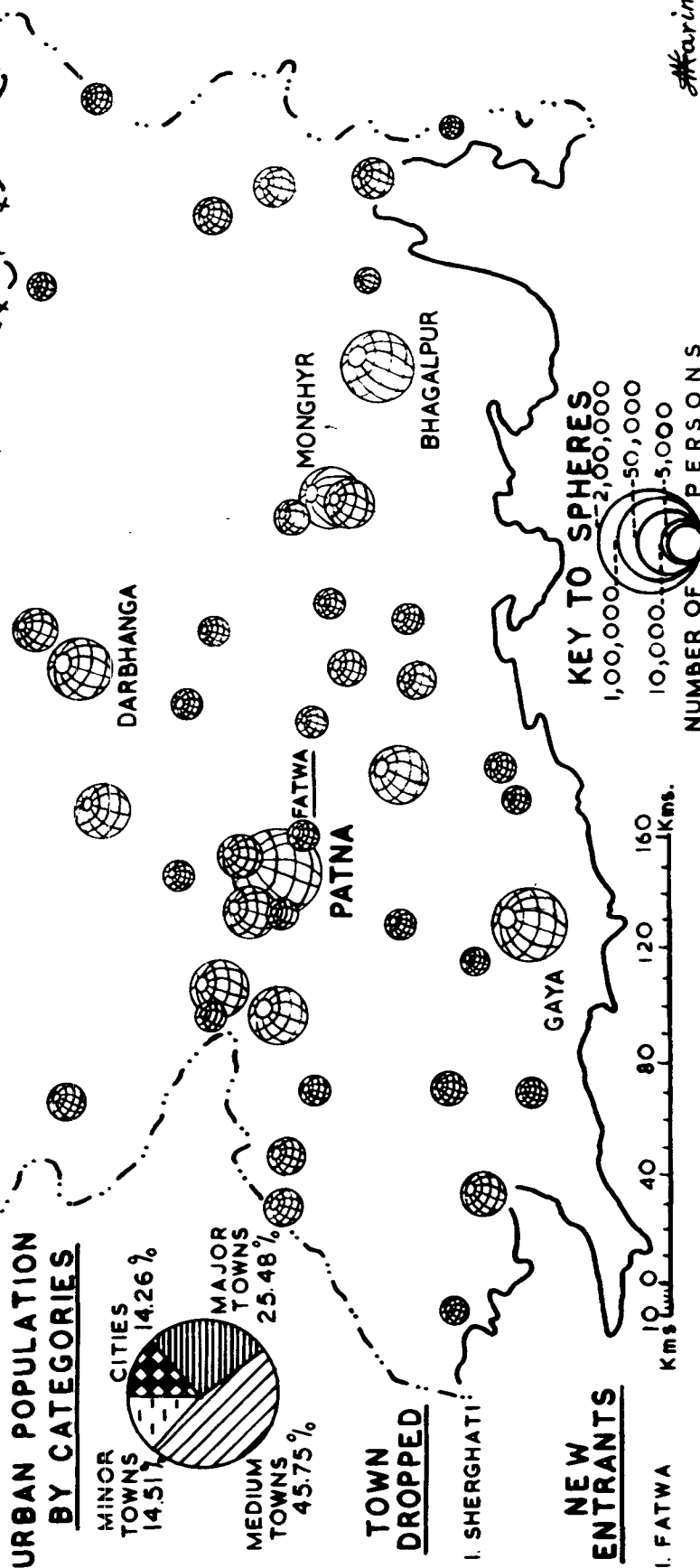
TOWN
DROPPED

1. SHERGHATI

NEW
ENTRANTS

1. FATWA

URBAN CATEGORIES	NUMBER	POPULATION
CITIES (OVER 1,00,000 POP)	1	1,59,690
MAJOR TOWNS (50,000-99,999)	4	2,85,391
MEDIUM ,, (10,000-49,999)	22	5,12,159
MINOR ,, (BELOW-10,000)	21	1,62,224
	48	11,19,464



Marini

the previous decades was made good. The increase in Jamalpur and Katihar was specially because of the creation of railway workshop in the former and some factories in the latter.

1921 - 1931

The urban element in the region even as late as 1931, was very small and with the single exception of Assam Valley, Bihar Plain had the smallest urban element. As against the urban population of 20.9% to the total in Bombay in 1931, only 4.9% of its total population lived in towns, and this was far below the

% Urban Population to Total 1931

Bombay State	20.9%	Madras	13.6%
U. P.	11.2%	C. P.	9.7%
Bihar Plain	4.9%	Bihar	4.5%
Assam	3.4%		
<hr/>			
INDIA	12.1 %		

average for India. There was no addition to the total number of towns in either the North Bihar or South Bihar in 1931. The only change in the list of South Bihar towns was that Sherghati which in 1921 had a population of 4,271 was dropped this time while in its place Patwa (population 9,393) as a Class V town was given urban status for the first time (Fig. 43). Some of the other minor towns of Class VI were promoted to Class V, while Monghyr, a major town of Class II of early decades which was classed as a medium town in 1901 due to loss by plague, once again regained

10. Lacy, W. G. - Census of India, 1931 Report Vol. 7
(Bihar & Orissa) Part I (Patna 1931).

its lost position and emerged as a major town, so that besides the city of Patna, there were 4 major towns (Bhagalpur, Gaya, Darbhanga and Monghyr) in the whole region. 1921 probably marked the turning point in the trend of population growth in towns. In the decades preceding the year almost all towns showed continuous decline, while after this period of crises — of famine, epidemic and flood etc. there was a definite relief to all towns, so that it was for the first time in 1931 that most of the towns that were declining had shown signs of rise. Patna which declined to its lowest in 1921, rose once again to the status that it had in 1872. The rise in case of Patna was phenomenal, to the extent of 33.1% over the last Census. This could be attributed to the rapid development of New Capital area and the adjacent wards of Bankipur, the extension of the University with its associated colleges, more specially the Medical College, a large influx of immigrants and settlers from the mufassil area and above all the high rate of natural growth among the resident population.

But the development of the urban population was shared by towns of all sizes and was not a feature of one or two isolated units. Gaya, Sarh, Dinapur, Tekari, Daudnagar, Jagdishpur Buzar, Dumraon, Chapra, Revelganj, Muzaffarpur and Darbhanga which were all declining till 1921 had all recovered and Patna, Arrah, etc. indeed had already regained their original position by 1931. The virtual disappearance of the plague had much to do with their striking recovery.

	Year of Max. Pop. 1891	Start of decline 1901	1911	Year of max. dec- 1921	Year of Relief 1931
Patna	165,192	134,785	136,153	119,976	196,415
Barh	12,363	12,164	9,138	8,464	9,750
Bihar	47,723	45,063	35,153	36,720	46,994
Dinapur	44,419	33,699	31,025	30,877	34,438
Tikari	11,532	6,437	5,861	4,827	5,481
Daudnagar	9,851	9,744	9,149	8,511	11,699
Jagdishpur	12,475	11,451	8,924	8,564	9,661
Buxar	15,506	13,945	11,309	10,098	13,449
Dumraon	18,384	17,236	15,042	14,132	14,421
Bhabhua	10,216	5,660	5,452	5,435	6,002
Chapra	57,353	45,901	42,373	42,415	47,448
Revelganj	13,473	9,765	8,334	8,186	8,812
Muzaffarpur	49,192	45,617	43,668	32,755	43,049
Darbhanga	73,561	66,244	62,628	53,700	60,676

Though Gaya recorded an unreal loss in 1911, because of the general exodus of the inhabitants just at the time of Census on account of panic of plague, the town showed recovery of a genuine character. The rise in this case was just over 30%. Pilgrim traffic and the railway had been its two main interests and from these its importance is still derived.

Being an unhealthy town, Bhagalpur was also subject to ravages by influenza, plague and cholera from time to time.

The ravages of influenza in 1918 and the economic distress that followed had their influence here. But after 1921 there occurred a great improvement in the standard of health and the population rose by 22% in 1931. This was specially on account of supply of electric power in 1929,¹² the section of new mills and factories, construction of a number of grain stores and the expansion of educational institutions. Khagaira, Siwan, Motihari, Bettiah Katihar and Kishanganj were other notable centres showing sharp increase in population; Khagaira had steadily increased in size and importance on account of the opening of the Samastipur-Khagaria branch of the railway line in 1915. The increase of 20% in Siwan was by virtue of its Sugar mills. Motihari and Bettiah had increased their population by 26.9% and 15% respectively, but although Motihari was the district headquarters it was a good deal smaller than Bettiah, the headquarter of the northern Subdivision. The increase in population during the last decade could be attributed to development of trade and the establishments of courts and educational institutions. The railway centre of Katihar was markedly progressive. Situated at the junction of various railways, it was the focus of the whole of the railway system of the district and various industries were springing up in the town for the working of the raw materials which passed through it. The growth of the trans-frontier trade with Nepal had added to

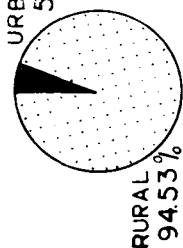
11. Lacy, W.G. - Census of India 1931, Vol. 7 (Bihar & Orissa)
(Patna 1933) Chapter II page 91.

12. Ibid - page 92,

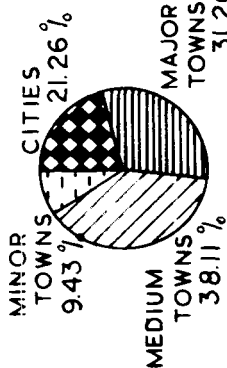
Cities & Towns of Bihar Plain

-1941-

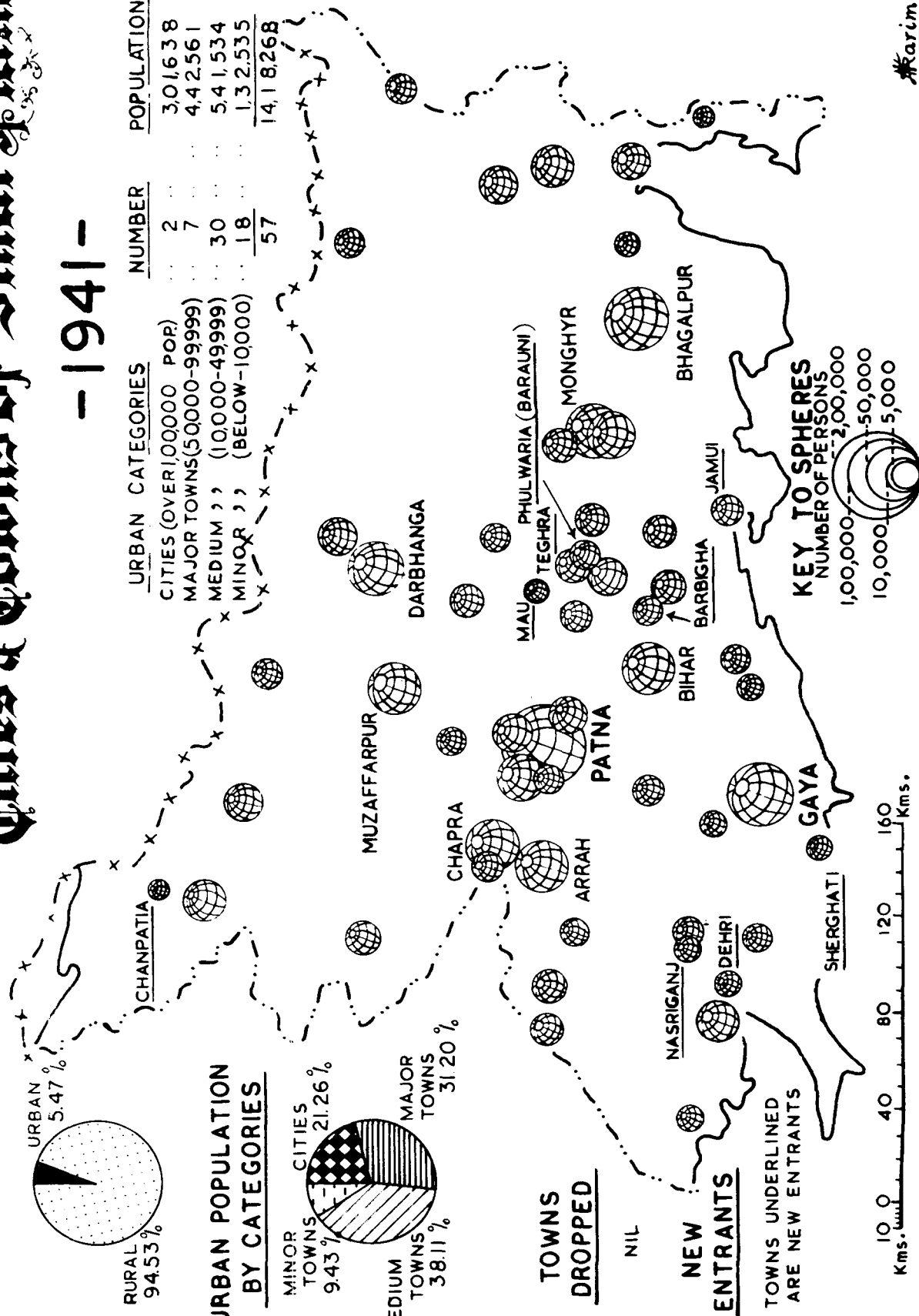
RURAL-URBAN
RATIO



URBAN POPULATION
BY CATEGORIES



URBAN CATEGORIES	NUMBER	POPULATION
CITIES (OVER 1,00,000 POP.)	2	3,01,638
MAJOR TOWNS (50,000-99,999)	7	4,42,561
MEDIUM " (10,000-49,999)	30	5,41,534
MINOR " (BELOW-10,000)	18	1,32,535
	57	14,18,268



the importance of that town. The growth of Kishanganj was due to its being the centre of the jute trade for the whole of Purnea district.

1931 - 1941

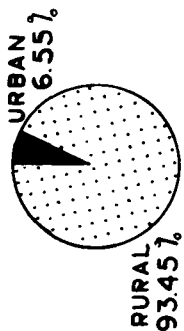
The decade 1931-41 showed a steady increase both with respect to the number of towns as well as the total urban population. Unlike the previous Census, no town was relegated from the list in 1941. On the other hand two medium towns (Jamui and Teghra) and seven minor towns namely, Mow, Phulwari, Sharghati, Nasriganj, Dehri, and Barbigha of Class V and Chainpatia of Class VI were added to the list as new entrants. The number of towns was thus 57 in 1941 in comparison to 48 in 1931. The total urban population also rose from 11 lakhs in 1931 to 14 lakh in 1941 (Fig.44) showing a net increase of 3 lakh or about 27.22% increase over the last Census. All these appreciably increased the percentage of urban dwellers over the previous Census, from 4.85% of the actual population in 1931 to 5.45% in 1941. On account of this overall growth in urban population, there was slight re-arrangement of towns with respect to their urban categories. In addition to Patna (population 1,96,415) which was the only city till 1931 Census, Gaya (105,223) was a new entrant to this Class I town. But the difference between the two cities namely Patna and Gaya were also quite apparent for if Gaya had just crossed the standard figure of one lakh population, Patna's population was almost approaching 2 lakhs. As regards major towns, there were seven instead of four. To the

list of the three namely Bhagalpur (93,254), Darbhanga (69,203) and Monghyr (63,150), four more medium towns of the previous Census namely Biharsharif, Chapra, Muzaffarpur and Arrah were also promoted to the category of major (Class II) towns. Bhagalpur was fast developing specially because of modern development of silk factory and educational institutions and was projected to be the future city of 1951 for the eastern section of the Bihar Plain. Darbhanga as a regional centre in North Bihar Central and Monghyr on the Ganga bank in South Bihar Central were also gaining importance. Both of these places with their historic association of the past — Darbhanga as Tughlaqpur alias Tirkhut of Toghlaq's time or as the Sarkar headquarters of Tirkhut Sarkar during Moghals and Monghyr as the Sarkar headquarters of the same name and the headquarters of Bihar Subah of Mir Qasim, were fast increasing in population. The increase in them was steady and appreciable, being 14.1 % in Darbhanga and 19.5% in case of Monghyr. Biharsharif as an old historic city, being then as the Subdivisional headquarters, had gained in importance where the increase was 16.1% while Chapra along the northern bank of the Ghaghara although commercially not so well-located with respect to the main stream, had also made considerable progress.

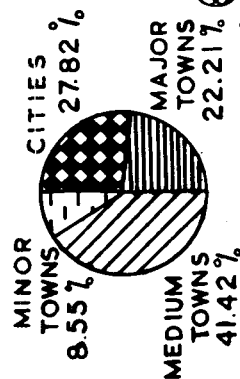
As regards the regional distribution, South Bihar with 33 towns located specially in its Patna Division and Monghyr South district contained some more than 9 lakh people comprising 65.98% of the total urban population for 24 towns with the total population of a little less than 5 lakhs comprising 34.03% of

Cities & Towns of Bihar 1951

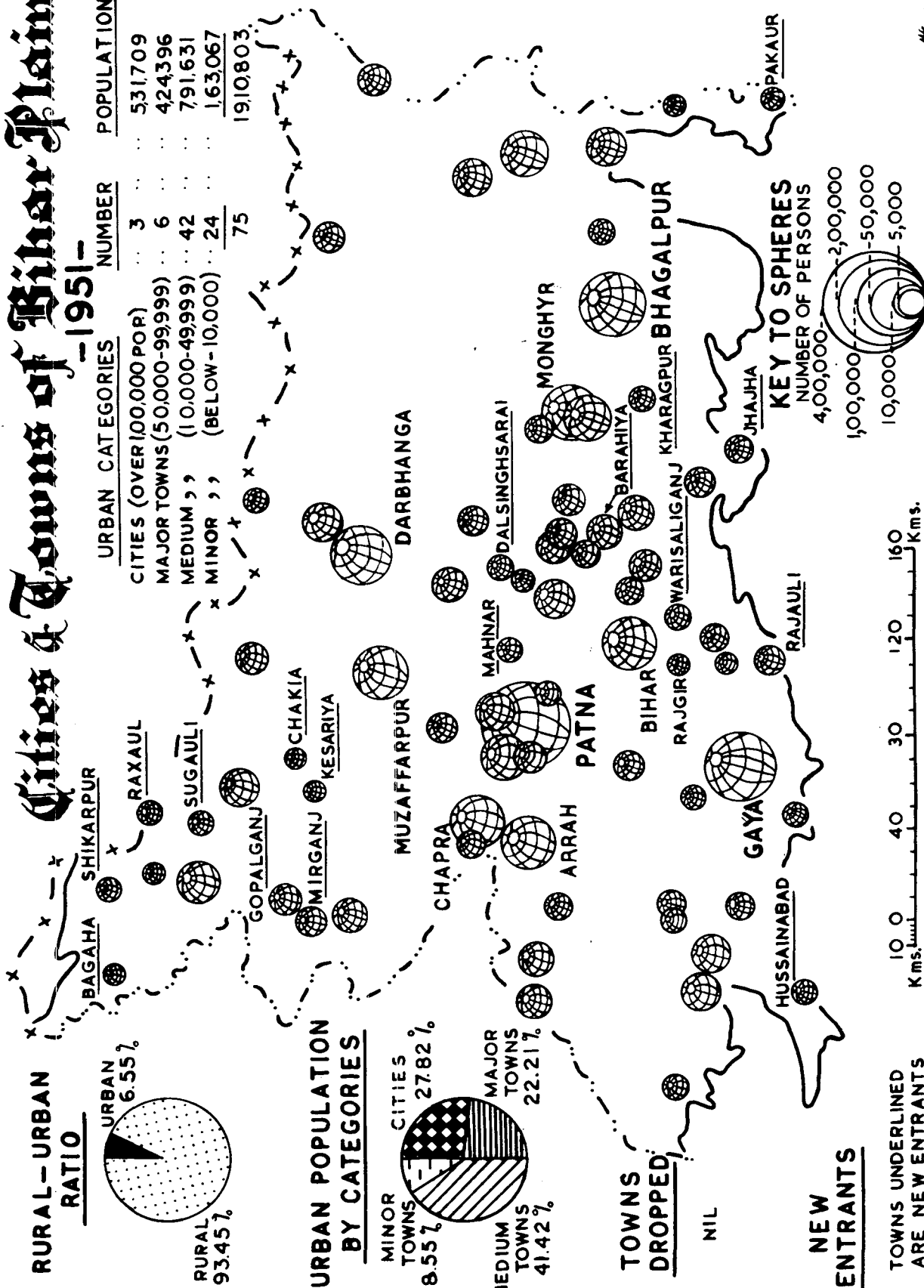
RURAL - URBAN
RATIO



URBAN POPULATION
BY CATEGORIES



URBAN CATEGORIES	NUMBER	POPULATION
CITIES (OVER 1,00,000 POP)	3	531,709
MAJOR TOWNS (50,000-99,999)	6	424,396
MEDIUM ,, (10,000-49,999)	42	791,631
MINOR ,, (BELOW-10,000)	24	1,63,067
	75	19,10,803



SOURCE :- RANCHOR, PRASAD - CENSUS OF INDIA REPORT, 1951, VOL 5, BIHAR, PART II A TABLES (PATNA 1953)

the total for Bihar Plain were located in North Bihar. In South Bihar, towns were located mostly in Patna division while in the north they were uniformly distributed throughout except the Kosi flood region, so that no towns existed in the Bhagalpur north and Saharsa districts (Appendix).

1941 - 1951

The decade 1941-51 was of a phenomenal growth both in the increase in the number of towns as well as appreciable increase in the urban population in the entire region. The number of towns rose from 57 to 75 while 4.8 lakh more were added to the urban population. This meant a 34% of increase over the urban population of 1941. The urban population in this way in 1951 was of the order of 19 lakhs comprising 6.55% of the total population of Bihar Plain. The phenomenal growth in urban population was not only high-lighted by the new entrants but was also well marked in the population of the existing towns of 1941. The greater percentage, however, was shared by the 3 cities and 6 major towns of Class I & II, jointly comprising 50.03% of the total urban population. The medium towns of Class III & IV comprised 41.42% (Fig.45). As a matter of fact 20 new Census towns were added to the list of 1941, but Lauthaha and Dumra notified areas forming contiguous parts of Motihari and Sitamarhi towns respectively in North Bihar, have because of geographical continuity not been considered as separate units. In this way 8 new towns in South Bihar and 10 new towns in North Bihar emerged. Out of the 75 towns, 41 towns with a total population of 12.3 lakh comprising

64.59% of the total for Bihar Plain were located in South Bihar Plain more specially in its three western districts namely Patna, Gaya and Shahabad, while a considerable number of towns were also located in Monghyr South district in the centre. Palamau district with the new entrant of Husainabad town was listed for the first time, while 34 towns with a total population of 6.8 lakh comprising 35.41% of the total urban population were located north of the Ganga. A notable exception however, as yet was the Kosi region.

Of the new entrants 5 towns were medium-sized and 13 were minor. The five medium towns were Gopalganj and Mirganj in Saran district in North Bihar and Barahiya, Rajauli and Jhajha in South Bihar. The minor towns of Sugauli, Razaul, Shikaripur, Bagaha, Chakia were located in north western Champaran district along the border of Nepal; Mahmar and Dalsinghsarai were a little to the northern bank of the Ganga and Husainabad was in the Son Be-entrant; Warisaliganj a few miles to the north-east of Nawada in Gaya district, Kharagpur in the Man Valley in Monghyr South and Pakaur some 10 miles south of Rajmahal overlooking the deltaic Bengal Plain. Kasariya Bazar in Champaran district and Rajgir in Patna district were the two minor towns enumerated for the first time as class VI towns (Population less than 5,000).

The decade had seen the Inde^{den}ence and partition of the country. The great transfer of population which followed the partition of August 15th, 1947, have not perhaps modified the general distribution of population very greatly, except to swell the larger towns. The increase in the number of towns and the

swelling in of the existing ones specially after independence on account of widespread development with respect to general amenities such as construction of roads, houses, educational institutions, parks, hospitals, etc. on the one hand and the development with respect to industrialization on the other reflect the beginning of a marked urban growth. The urban population percentage to total population in Bihar Plain rose to 6.55% in 1951 from 5.49% in 1941 but this is still too low a figure as compared to Bihar's average (6.77%) and far too low with respect to that of India where some 17.24% of the people live in towns.

Among the individual towns and cities that made phenomenal growth, mention can be made of Patna, Gaya, Bhagalpur, Muzaffarpur, Darbhanga, Khagaul, Sahibganj, Sitamarhi, Begusarai, etc. The increase in the city of Patna was of 44.33% and in Gaya city it was 27.06%. This was attributed to the rapid development as regards the construction of Government buildings and settlements on the south-west and in the suburb in case of Patna and a similar nature of development in specially the Sahibganj area of Gaya city. Moreover the former on account of its being the capital of the State of Bihar and the latter due to its religious sanctity have showed marked growth after the independence.

The increase in Bhagalpur in the eastern South Bihar was also considerable, so that its increase of 22.82% owed to its expected promotion as a new city in 1951 (Population 114,530). Thus the number of cities in the Bihar Plain now rose to 3, but all of

these were located to the south of the Ganga in South Bihar Plain. But although Bhagalpur was enlisted as a new city, it was little more than large country town. The commercial and industrial element were also less strong than in any of the other two cities and its chief industry silk-weaving was a cottage occupation. Muzaffarpur and Darbhanga towns in North Bihar grew considerably as regional collecting centres, the increase in them being 35.94% and 22.56% respectively, so that in 1951, the population of these centres of North Bihar was as high as 73,594 and 84,816 respectively figures that suggested the prospects of their expected growth into cities north of the river Ganga by the following census. The increase in case of Motihari (25.05%) and Sitamarhi (23.33%) was specially large because of the emergence of contiguous suburban section of Lauthaha in case of Motihari and Dumra in case of Sitamarhi. The rapid increase in case of Dehri (195.81%), Khagaul (79.06%), Katihar (60.92%), Jamalpur (12.11%) etc. can however, be attributed to the development and importance of railway activities at these centres or due to the establishment of a few factories in them.

But to the general trend of rise of population in the cities and towns, exceptions are also not quite insignificant.

	1941	1951	Decennial decrease	Decennial % Variation
Daudnagar	11,133	10,448	- 685	- 6.15%
Sheikhpura	16,333	15,785	- 548	- 3.35%
Khagaria	15,559	10,050	- 5509	-35.41%
Hisua	7,608	5,676	- 1932	-25.39%
Fatuha	19,411	8,482	-10929	-56.30%
Tikari	6,712	6,278	- 434	- 6.47%

Towns like Daudnagar, Sheikhpura and Khagaria and Hisua showed decrease in population. Although a number of other towns too probably suffered decreases because of partition of the country and the migration of population that followed.

Condition during the decade
1951 - 1961

Following the re-organisation of States in 1956 and on account of the growth of the knowledge and the importances of urbanism in a region, a uniform standard was laid down all over India for determining the non-municipal towns. This has now made the line specially between swollen villages and minor (Class V or VI) towns clear, which according to P.C.Tallent was not easy to draw in 1921. After due consideration of many facts pertaining to Indian conditions, the urban population is now defined in a more scientific manner than it was before. The idea of Fawcett, C.B. 'to distinguish towns from villages on the basis of function' — i.e. in respect of the occupation of the more important part of their inhabitants appears to be the main consideration today. Most of the minor towns of Class V and VI categories i.e. towns having population between 5,000 and 9,999 or below 5,000 the urban character of which was not above suspicion in the past, essentially possess today —

(a) a density not less than 1,000 persons per square mile

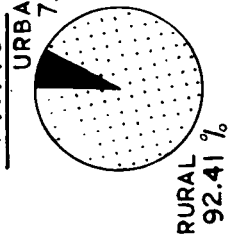
and (b) where $\frac{1}{5}$ th of the people depend for their livelihood on non-agricultural source. The simpler rule of 5,000 population figure as of old is still strictly followed but exceptions even today are not quite uncommon. This is specially in

the case of places of outstanding historical importance and tourist interests such as in the case of Bodh Gaya and Rajgir which were in the past the nerve centres of the whole of the Bihar Plain, the former being the cultural and religious centre of the Buddhist World; while the latter the imperial capital of the early Magadhan Empire.

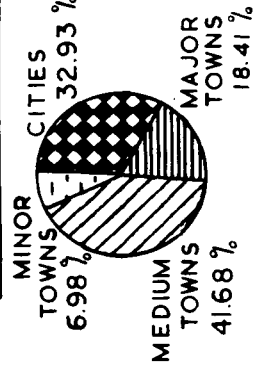
This revolutionary step and the adoption of the afore-said criteria has thus made a sweeping change not only in Bihar Plain but almost everywhere in the country. Indeed the application of these tests eliminated a number of places that were towns in 1951 Census while the number of cities and towns which was 3,057 in India was reduced to 2690 in 1961. Inspite of the decrease in the number of towns the total urban population from 62.3 million in 1951 increased to 78.8 million in 1961. There was thus an increase of 16.5 million in the urban population despite the elimination of more than 300 places formerly regarded as towns.¹⁴

The new criteria were responsible for the elimination of a few towns from the 1951 list in Bihar Plain also. But as a whole there was increase both in the number of towns as well as in the total urban population during 1951-61. Even in the Kosi Sandy flats where no towns existed before, there emerged no less than eleven new towns for the first time -- 6 in Saharsa namely Saharsa, Supaul, Nirmali, Birpur, Madhepura and Murliganj 1 in Bhagalpur North namely Haugachia and 4 in Purnea namely Araria, Jogabani, Qasba and Benmankhi. Thus while the number

RURAL-URBAN RATIO

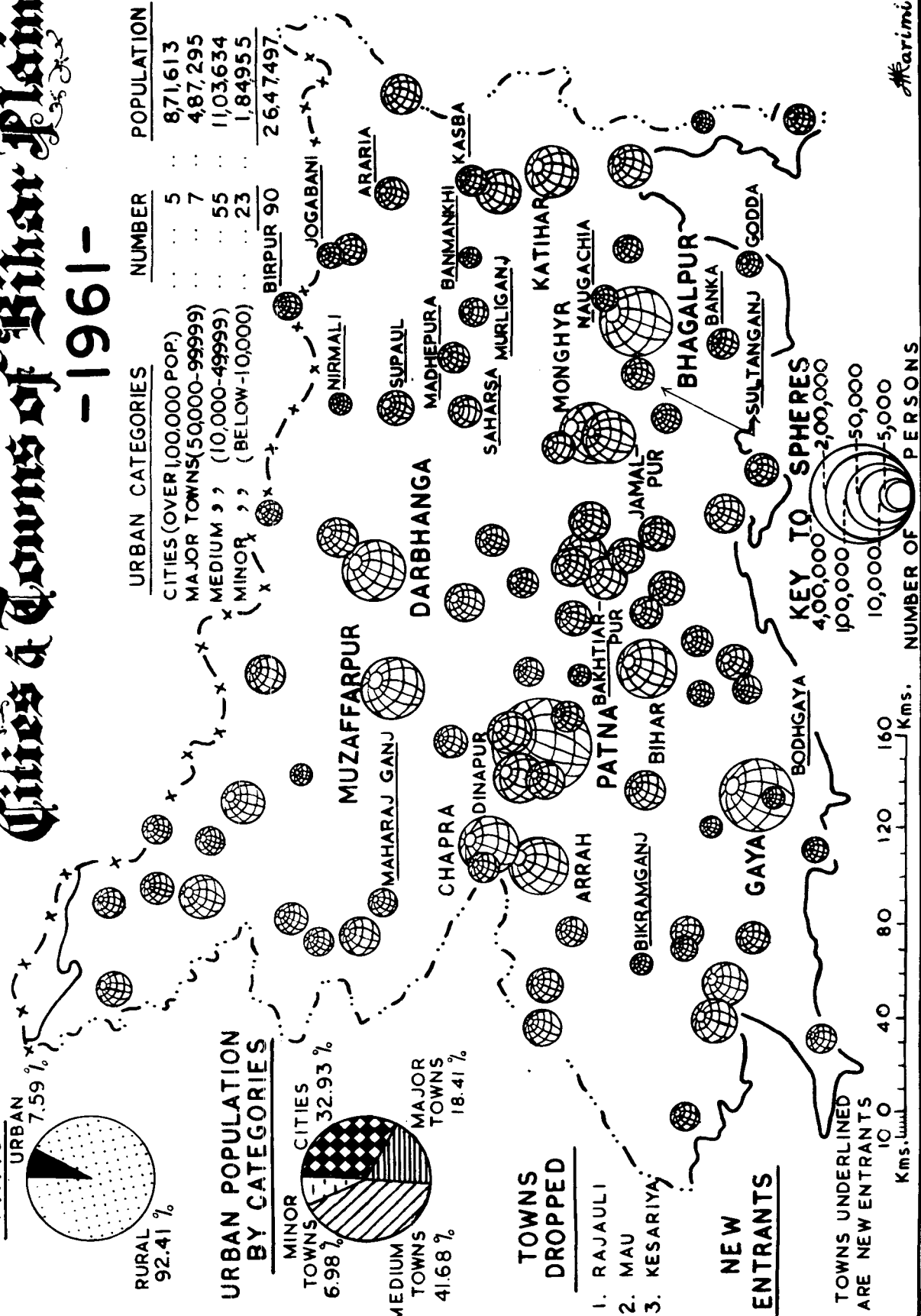


URBAN POPULATION BY CATEGORIES



URBAN CATEGORIES	NUMBER	POPULATION
CITIES (OVER 1,00,000 POP.)	5	8,71,613
MAJOR TOWNS (50,000-99,999)	7	4,87,295
MEDIUM " (10,000-49,999)	55	11,03,634
MINOR " (BELOW 10,000)	23	1,84,955
BIRPUR 90		26,47,497.

Cities & Towns of Bihar -1961-



Bodh Gaya, Bikramganj, Naugachia, Murliganj, Nirmali, Birpur, Banmankhi, Jogabani, Godda and Bakhtiarpur are all minor towns.

No. of towns carried over from 1951 Census	- 75
Dropped	3 (Kesaria, Mau, (Now), Rajauli)
New Entrants	<u>18</u>
Total in 1961 - 90	

Towns like Supaul, Nirmali, Birpur, Jogabani and Araria are partly due to their strategic location along the border of Nepal and commercial association with that country. Araria and Kasba, Banmankhi are important collecting centres of rice and jute and they are today noted specially for their trade in these commodities. Bodh Gaya, although so late in the urban list of Bihar, is associated to its past history and Buddhistic importance. Bakhtiarpur and Sultanganj are railway centres located on the main line and the loop line of the Eastern Railway respectively and the railways have largely contributed to their commercial importance. The former, specially on account of the newly constructed broad gauge railway line for Biharsharif and Rajgir has gained in importance while the latter is still having sufficient river-borne trade as it is located along the south bank of the Ganga, in the east. The emergence of Banka and Godda towns along the southern fringe of Bhagalpur south, and Santhal Parganas districts is as towns of contact between the plain and the adjoining Rajmahal upland.

Demographically the dividing line as of previous Census between a town and a village is still at 5,000; so that 478

overgrown villages in Bihar Plain were qualified for being treated as urban in 1961 and the majority of such places lay in Darbhanga (having 104 such places) followed by Muzaffarpur with 55, Monghyr with 54 and Champaran with 52 such places. But these so-called swollen villages failed to fulfil the recently laid down criteria i.e. $\frac{3}{4}$ th of the adult male population of these places were not

Over grown villages with population
over 5,000 not considered as towns

Districts	No. of vill- ages	Population	% to total Population	Some of the import- ant places
Patna	27	2,08,237	0.49%	Phulwari, Masaurhi, Punpun, Bihta, Giriak, Hilsa, Islampur
Gaya	12	79,588	0.19%	Rajauli, Kako, Arwal, Deo.
Shahabad	25	1,63,411	0.04%	Shahpur, Bihea, Piro, Sahar, Nokha.
Monghyr S.	13	91,431	0.21%	Surajgarha
Bhagalpur S	12	93,306	0.22%	Sabour, Pirpainti
S. Parganas	3	17,320	0.04%	
Saran	17	1,13,322	0.27%	Sonepur, Masrakh, Husain ganj, Guthni, Jalalpur.
Champaran	52	3,76,055	0.88%	Madhubani
Muzaffarpur	55	3,85,459	0.91%	Vaisali, Pupri, Riga, Sursand, Sonbarsa
Darbhanga	104	7,38,119	1.73%	Pusa, Laukaha, Singhia Mohiuddinnagar
Saifpur	46	3,16,619	0.74%	Tribeniganj, Pipra, Alam nagar, Singheswar
Monghyr N	41	3,06,639	0.73%	Gogri, Bakhri, Simri, Sahabpur Kamal
Bhagalpur N	12	1,05,653	0.25%	Gopalpur, Bihpur
Purnea	39 <hr/> 478	2,66,403	0.63%	Dhondam, Bhawanipur, Lanihari, Raniganj

engaged in non-agricultural livelihood and the density of population also did not exceed 1,000 persons per square mile.

Thus these places which may in near future justify to become urban units, however, at this census have not been treated as towns. On the other hand although Lauthaha (Population 1982), Dumra (3,763) and Bakhtiarpur (4,548) have population less than the standard numerical test of 5,000 these places form distinct agglomerations with modern urban amenities and have non-agricultural outlook, as majority of the people living in them depend for their livelihood on sources other than agriculture.

Towns	Area in sq.miles.	Population	Density	Working Popu- lation(Non- agricultural)	Working Popula- tion (Agricul- tural)
1.Bakhtiarpur	1.89	4,548	2,406	85.68%	14.32%
2.Dumra (N)	2.00	3,763	1,882	87.54%	12.46%
3.Lauthaha(II)	0.88	1,982	2,252	82.34%	17.66%

Due to growth of individual towns and the emergence of semi-urban units there has now occurred a slight re-arrangement as regards the number of towns in the various urban categories. Today there are five cities namely, Patna, Gaya, Bhagalpur, Muzaffarpur and Darbhanga in the region. The two new cities are Muzaffarpur and Darbhanga located in the heart of the North Bihar Central and are cities that have emerged for the first time north of the Great Ganga barrier. The five cities contain some 8.7 lakh people comprising 32.93% of the total urban population of the entire region.

The five cities

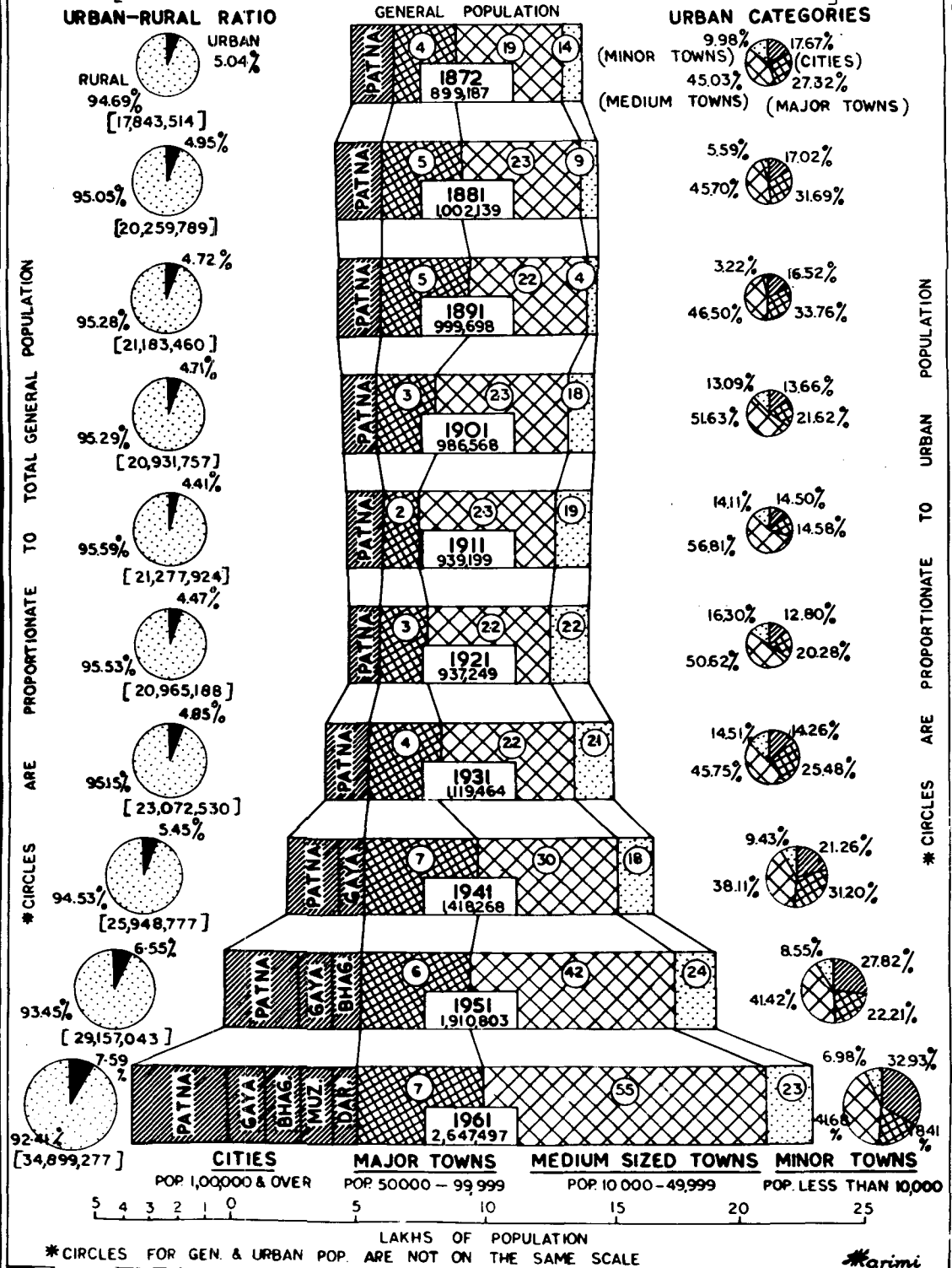
	Area 1951	Area 1961	Pop.1951	Pop.1961	Decennial variation	Percent variation	Urban density (1961)
1. Patna	16.50	22.33	2,83,479	3,64,594	81,115	28.61%	16,328
2. Goya	11.40	11.78	1,33,700	1,51,105	17,405	13.02%	12,827
3. Bhagal- pur	11.10	11.09	1,14,530	1,43,850	29,320	25.60%	12,971
4. Muzaff- arpur	7.10	7.90	73,594	1,09,048	35,454	48.18%	13,804
5. Darbhanga	7.00	7.50	84,816	1,03,016	18,200	21.46%	13,735

Apart from the cities the 7 major towns have also made considerable progress. Arrah, Dinapur, Monghyr, Jamalpur and Chapra are located along the Ganga and are traversed by busy railway and road communication lines. Katihar in Purnea district is an important railway junction and a significant commercial and industrial centre in the north-east serving also as the gateway to Assam valley. These seven major towns together contain a little less than 5 lakh people comprising 18.41% and together with the cities comprise a little more than half the total urban population in 1961 while the other half of the urban dwellers of the region live either in the medium towns or in minor towns. The 55 medium towns distributed all over the region contain 9 lakh people constituting 41.68% while there are 23 minor towns (of Class V & VI categories) but they share only 6.98% of the total urban population of the region.

FIG. NO.47

TREND OF URBANISM IN BIHAR PLAIN (1872-1961)

FIGURES BELOW CENSUS YEARS ARE URBAN POPULATION; FIGURES WITHIN CIRCLES ARE NUMBER OF TOWNS FOR URBAN CATEGORIES CONCERNED; BRACKETTED FIGURES UNDER URBAN-RURAL RATIO COLUMN ARE TOTAL



SOURCE :-THIS MAP IS PREPARED ON THE BASIS OF DATA OBTAINED FROM CENSUS OF INDIA REPORTS, BIHAR VOLUME (1872-1961)

Chief features of the past
and future trends.

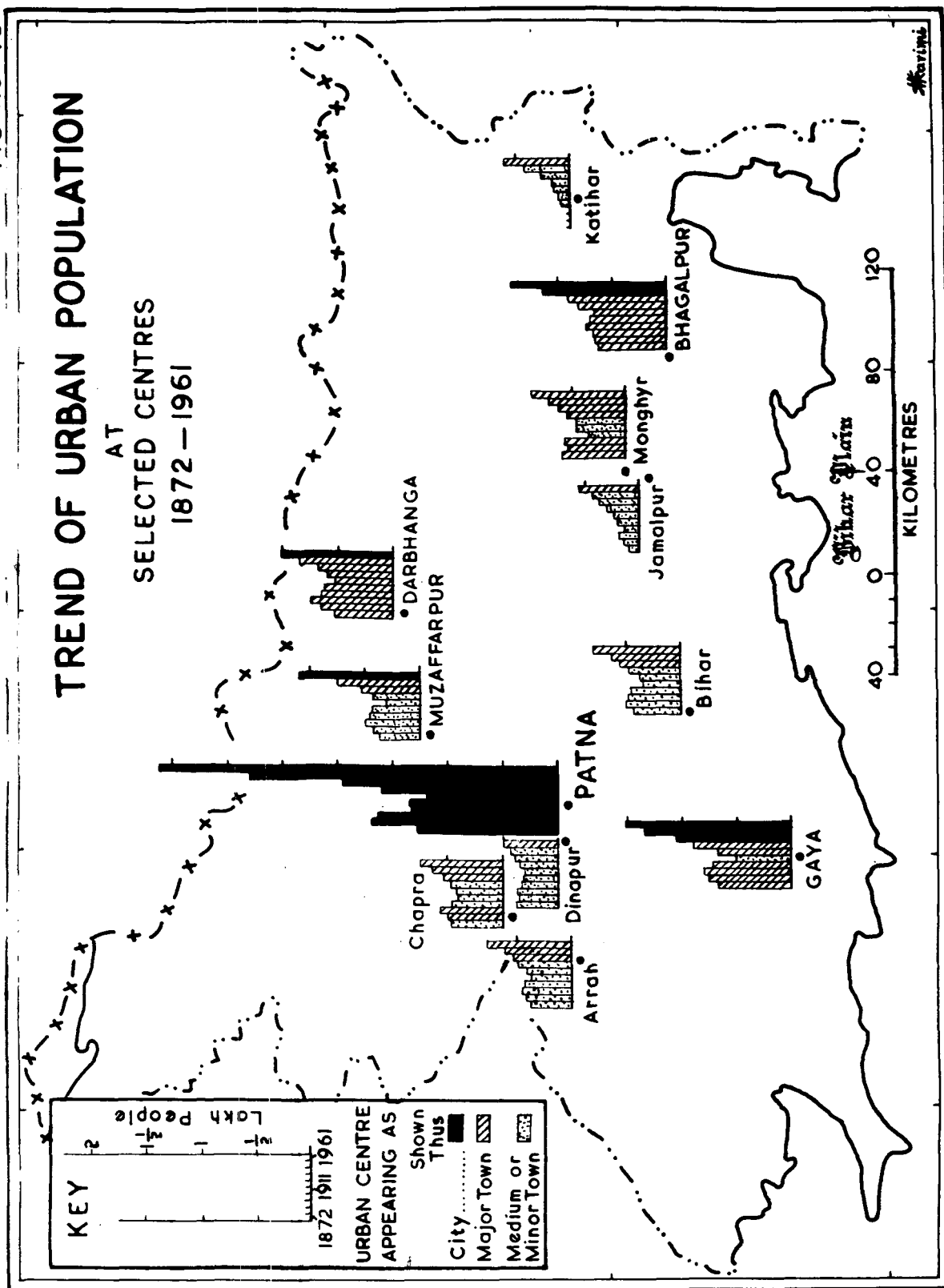
Summarising therefore it appears from the foregoing analysis of the various decades that rate of growth of urbanism in Bihar was almost stagnant till 1921 or was on the decline so that the urban population fell from 1.002 million in 1881 to 0.927 in 1921.

Trend of Modern Urban Growth in Bihar Plain

Census year	No. of towns	% of urban to total population	Urban population	Decennial percentage variation
1872	38	5.04%	8,99,187	
1881	38	4.95%	10,02,139	+ 11.45%
1891	32	4.72%	9,99,698	- 0.24%
1901	45	4.71%	9,86,568	- 1.31%
1911	45	4.41%	9,39,199	- 4.80%
1921	48	4.47%	9,37,249	- 0.21%
1931	48	4.85%	11,19,464	+ 19.44%
1941	57	5.47%	14,18,268	+ 27.22%
1951	75	6.55%	19,10,803	+ 34.16%
1961	90	7.59%	26,47,497	+ 38.55%
Probable figures for 1971	110	9.00%	37,00,000	+ 40.00%

The urban percentage which was though as low as 5.04% in 1872 further decreased so that only 4.47% of the people in Bihar Plain were residing in towns in 1921 (Fig.47). Although

FIG. NO. 48

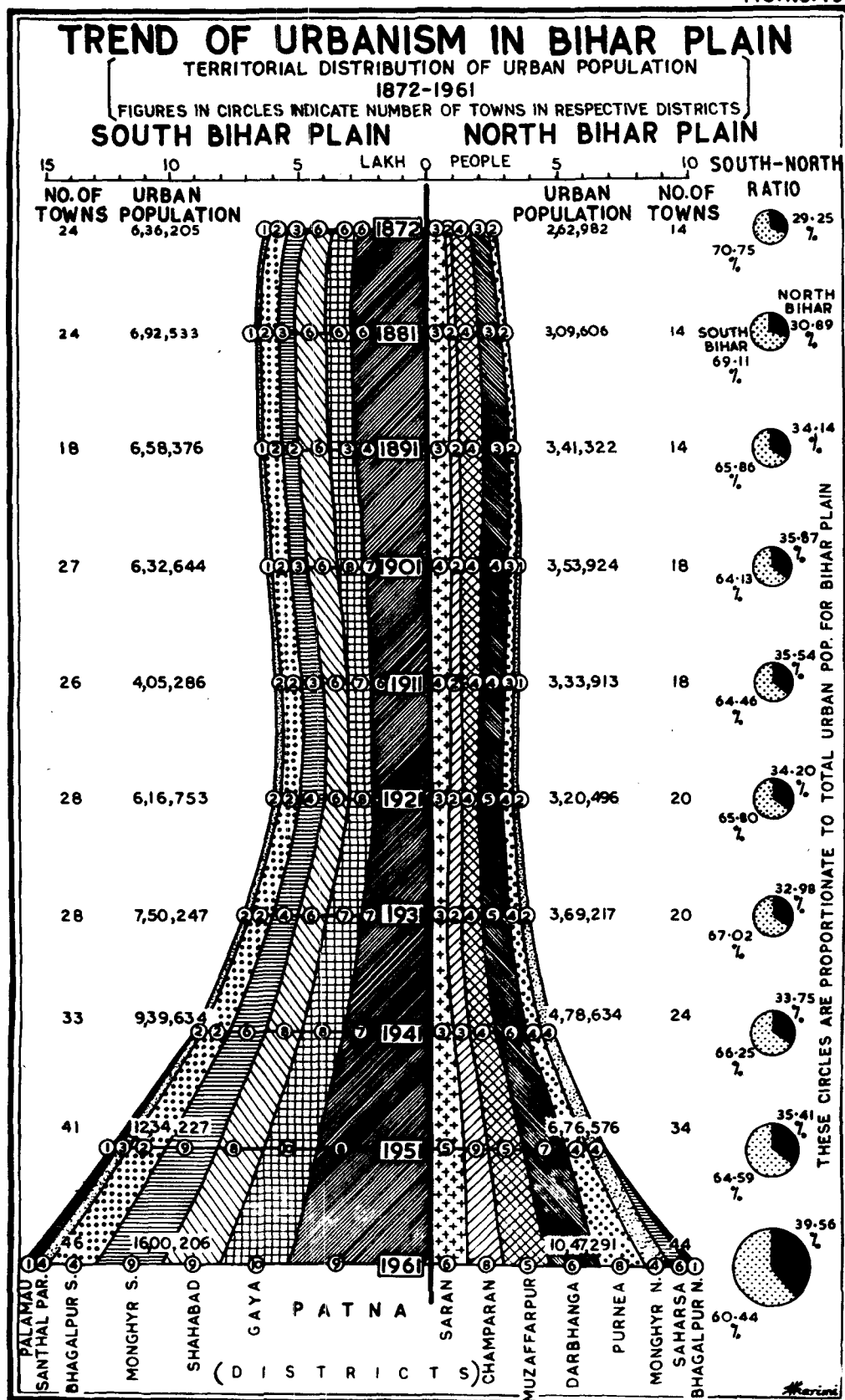


SOURCE :- CENSUS OF INDIA REPORTS (1872-1961)

there was slight increase in the number of towns from 38 to 48, yet it did not show any appreciable re-arrangement of urban centres in the region. Most of the towns were either the old established centres of bygone days or were minor administrative or commercial centres. As regards the size of the various urban centres, it is quite evident that the major share was those of the medium-sized and minor towns comprising on an average about 88% of the total number of towns of Bihar Plain and some more than 57% of the total urban population on an average was residing in these minor or medium towns prior to 1921. There was only one city — The city of Patna and 3 to 4 major towns in the entire Plain which too were in a decadent condition. Barring a few exceptions (as of a few towns in Purnea and eastern South Bihar) most of the towns showed a virtual decline in their growth till 1921.

The year 1921, evidently marked the turning point in the trend of the modern urban growth. In the decades preceding the year almost all towns showed continuous decline while after this when the crises on account of famine, epidemic, flood etc. were practically over there was a definite relief to all the towns (Fig.48). The towns in this way did not only show increase in their population but that considerable number of new towns specially in the last two decades (i.e. 1941-51-61) have emerged in the region, The towns are now widespread in the entire region. Thus where no towns existed in the Saharsa section of Kosi Sandy flats before, within 10 years of the last decade no less than

FIG. NO.49



SOURCE :- THIS MAP IS PREPARED ON THE BASIS OF DATA OBTAINED FROM CENSUS OF INDIA REPORTS, BIHAR VOLUME (1872-1961)

six towns have now been established. Besides the development of more commercial and industrial centres throughout the region a number of contact towns, along the Nepal border and in the southern fringe zone where the ghats of the Bihar Plateau meet the 'Plains' have emerged. Specially on account of the phenomenal growth since 1941 (the increase being of the order of 34-38% in each decade) the total urban population has now approximately been trebled, so that it was 26.47 lakhs in 1961 as against only 9.37 lakhs in 1921 (Fig. 49). There has been appreciable gain in the urban percentage as well for whereas only 4.47% of the people in Bihar were town-dwellers in 1921, 7.57% of them lived in towns in 1961. But this is still too low a figure as compared to India's average of 17.94%. The number of towns has also been approximately doubled, the emergence of new entrants has mostly been in the post-independence period specially after 1947, so that there were 90 towns (93 Census urban units) in 1961 as against only 48 in 1921. If the present rate of growth goes on as has been till now (1966) and no future calamity like famine, epidemic or serious flood is apprehended, the total population by 1971 may shoot to the order of some 37 lakhs giving an increase of approximately 40% over the 1961 figure of Census, and the number of towns may exceed 110 and the urban percentage to the total population in the region be without any doubt above 9%. Indeed the railways, construction of highways more specially the national highways such as metalling of Muzaffarpur-Raxaul road, Dibrpur extension

in Saharsa and the trans-regional military Trunk highway from Gopalganj in Saran in the west to Katihar and Kishanganj in the east by way of Muzaffarpur, Barauni and Khagaria have all given a great impetus and new trend to urbanism in North Bihar. Raxaul along Nepal border, Barauni with its huge establishment of oil refinery and on account of its strategic location north of Rajendra Bridge on the Ganga linking the metre gauge of North Bihar Railway of N.E. Railway lines and the Broad gauge of the Eastern Railways of South Bihar, and the frontier town of Katihar as the most important railway junction and great commercial centre, is bound to gain importance in near future. Indeed these will develop, in course of time as the great cities of the region.

Since 1921, there has also been sweeping changes as regards the size of the towns. Prior to 1921, there was only one city, i.e. Patna and only three major towns namely Bhagalpur, Gaya and Patna and these two urban categories of towns comprised jointly only 33.08% of the total urban population of the region whereas the medium and minor towns comprised 66.92% of the total urban population. The conditions since then have much changed. In 1961, not only the number of the cities rose to 5 but that they were distributed throughout the region so that for every administrative or natural section there appears a separate city now. The five cities are Patna and Bhagalpur in the Ganga Riparian tract one in the west central and the other in the east; Gaya city is located in

Number of towns and Percentage of urban
Population by Urban Categories in Bihar
Plain.

	Cities*	Major towns*	Medium Towns*	Minor Towns*	Total
1872	No. 1 % 17.67%	4 27.32%	19 45.03%	14 9.98%	38
1881	No. 1 % 17.02%	5 31.69%	23 45.70%	9 5.59%	38
1891	No. 1 % 16.52%	5 33.76%	22 46.50%	4 3.22%	32
1901	No. 1 % 13.66%	3 21.62%	23 51.63%	18 13.09%	45
1911	No. 1 % 14.50%	2 14.58%	23 56.81%	19 14.11%	45
1921	No. 1 % 12.80%	3 20.28%	22 50.62%	22 16.30%	48
1931	No. 1 % 14.26%	4 24.48%	22 45.75%	21 14.51%	48
1941	No. 2 % 21.26%	7 31.20%	30 38.11%	18 9.43%	57
1951	No. 3 % 27.82%	6 22.21%	42 41.42%	24 8.55%	75
1961	No. 5 % 32.93%	7 18.41%	55 41.68%	23 6.98%	90
Probable figures for 1971	No. 7 % 40.00%	7 16.00%	65 37.00%	31 7.00%	110
New entrants (Probable)	Monghyr Bihar	Barauni Purnea	Phulwari Bihta Sonepur Sabour etc.	Vaisali Pusa Nalanda etc.	

* Cities mean Class I towns having population 1,00,000 & over
Major towns mean Class II towns having population between 50,000 - 99,999
Medium towns mean Class III & IV towns having population between 10,000 - 49,999
Minor towns mean Class V & VI towns having population below 10,000

the southern upper South Bihar, while Muzaffarpur and Darbhanga cities are north of the Ganga in the hitherto city-vacant North Bihar Plain. Apart from these principal urban centres, 7 major towns namely Monghyr, Jamalpur, Bihar, Dinapur and Arrah in South Bihar and Chapra and Katihar in North Bihar are also progressively rising. These two categories of towns in 1961 comprised 13.53% of the total number of towns and 51.34% of the total urban population of the Bihar Plain. The present tendency is thus towards concentration of population more in the cities than in the minor or medium towns and about 33% of the urban population alone were found in the 5 cities in 1961. This pattern of urban categories and the people living in them is very much similar to that of Bihar State or the country itself.

Number of towns and urban Population by Categories (1961)

		Cities	Major towns	Medium towns	Minor towns	Total
Bihar Plain	No.	5	7	55	23	90
	Population	8.7 lakh	4.9 lakhs	11.0 lakh	1.8 lakh	26.4 lakh
	%	32.93%	18.41%	41.68%	6.98%	
Bihar State	No.	7	8	83	52	150
	Population	13.01lakh	5.4 lakh	16.9 lakh	3.8 lakh	39.1 lakh
	%	33.15%	13.91%	43.14%	9.80%	
India	No.	107	141	1332	1110	2690
	Population	351 lakh	96 lakh	269 lakh	72 lakh	788 lakh
	%	44.54%	12.21%	34.13%	9.12%	

This is also a fact that the towns are now widespread and have grown much in size. The towns and cities of Bihar Plain

occupy about 431.5 square miles comprising 0.14% of the region's total area and the urban density per square mile of the town area averages to 5,271 with a maximum of 18,891 in Sasaram town in South Bihar and 18,247 in Siwan in North Bihar recorded in 1961. In the city of Patna, however, 16,328 persons dwell per square mile of its area. Sahibganj in the east also shows considerable congestion where the density in 1961 was recorded as 17,449.

As regards the future pattern of urban categories it appears that the trend will remain the same and population would concentrate more and more in cities and major towns on account of general urban consciousness in the people of the region. The number of cities and major towns out of an expected total of 110 urban centres in 1971, will be 7 in each case so that the number of cities is bound to increase by 2 or 3. The new entrants in the urban category of cities will be Monghyr and Bihar while there is every likelihood of Arrah and Chapra too being recognised as cities in the next Census or in 1981. Barauni, Purnea and Dehri may be promoted to the group of major towns by the same time. Amongst the expected new entrants in the medium and minor categories mention can be made of Phulwari, Bihta, Islampur, Hilsa, Arwal, Sabour etc. in South Bihar and Hathwa, Sonpur, Vaisali, Pusa, Singhia etc. in North Bihar.

PART III

**Form & Function of
Towns**

Chapter Five
Morphology
of
Towns

CHAPTER FIVE

URBAN MORPHOLOGY

The ground plans of towns have some external shape or form; while at the same time there is distinctly some pattern in their internal layout. Their outer forms and the internal layout thus constitute what can be termed 'Town Plan' or simply 'Form of the Town'. Sometimes urban morphology is taken as a synonym of the ground plan. But this is rather a partial view. The form of a town, depends upon many other factors apart from ground plan. It is the outcome of contiguous urban settlement with varied types of houses, streets, lanes and green spots, etc. These organs, constituting an urban unit collectively, give certain form to the town which may be natural (unplanned) or planned or as in most cases it may be a combination of the two. The external plan i.e. the shape of the town, for example, is generally influenced by location, topography and site condition. The internal pattern accounts for the characteristic colonization or occupation units and these may vary in size and complexity from the simple small towns on one hand to great urban metropolis on the other. The urban morphology in this way refers not only to the very shape i.e. external form and the internal layout of the streets collectively called ground plan but also includes the discussion of the various occupation or land use units, the arrangement and nature of the dwellings of the various sections, their horizontal ground extent and

vertical dimensions, building material both of the walls as well as of roofs, nature of the roof (flat or sloping) and their architectural characteristics; the nature of the lanes which run between the blocks of settlement, the open spaces in so much as they provide amenities with respect to free air, athletic and social gathering; green spots and skyline which may be flattish or even pinnacled or terraced and which may speak of the history and religious composition of the population and architectural style.

In their characteristics, the forms of the towns are the products of natural and cultural setting. Towns may be situated along a river like Patna or along a lake like Motihari. They may show topographic irregularities or evenness. Some may be located on a bluff or a levee (Barahiya), while a few may be well located within the flood plain of a river (Rusera); there are towns that appear to have developed along the base of an escarpment (Jhajha, Sherginji) where surface gradient shows a sharp contrast. Again some may appear to be located at a nodal point in the heart of a level plain with an easy approach from various directions (Gaya). In this way the immediate site with respect to general relief and run-off influences the growth and plan of towns at all stages. But apart from these natural factors, cultural elements are also very important and in some cases they appear to play a more effective role than do the natural elements. Indeed the URBAN MORPHOLOGY as A. Davies puts

it, " can be regarded in some respects as a picture of human relationship both in space and time; a mosaic whose different parts growing in successive periods show the varied interplay between geographical conditions and man's ever changing activities and needs¹".

External Ground Plan (Shape of a town)

Ground plan involves two things - external shape and the internal layout of the buildings and streets; so that the discussion needs delineation of the obvious characteristic pattern both for the shape and the streets. Let us examine the first item i.e. the external shape of the ground plan. Here we are dealing with an area which is a depositional plain of an even topography except on the southern margin where outliers of Bihar Plateau appear here and there. Therefore the physical dominants which have influenced the urban morphology are the river banks or levees or similar uplands associated with old river channels or of ox-bow lakes, etc. Then the water bodies in the form of river or lake may also influence the form of towns. The influence of isolated hills is obvious. Similarly marshy areas, the nature of soil and drainage may also influence the external form of the town. As to the cultural factors, forts, places of worship, ancient routes, fortifying walls, artificial tanks, artificially raised uplands, artificially raised sites, pre-existing ruins, ancient market places and modern lines of

1. Davies, A- 'A study in city morphology and historical Geography'- 'Geography'-Vol.18,1933 (London 1933), Page 25.

communications, etc. are some of the cultural factors influencing the urban morphology. Keeping in mind the external form, the towns of Bihar Plain fall under the following morphological classes or types.

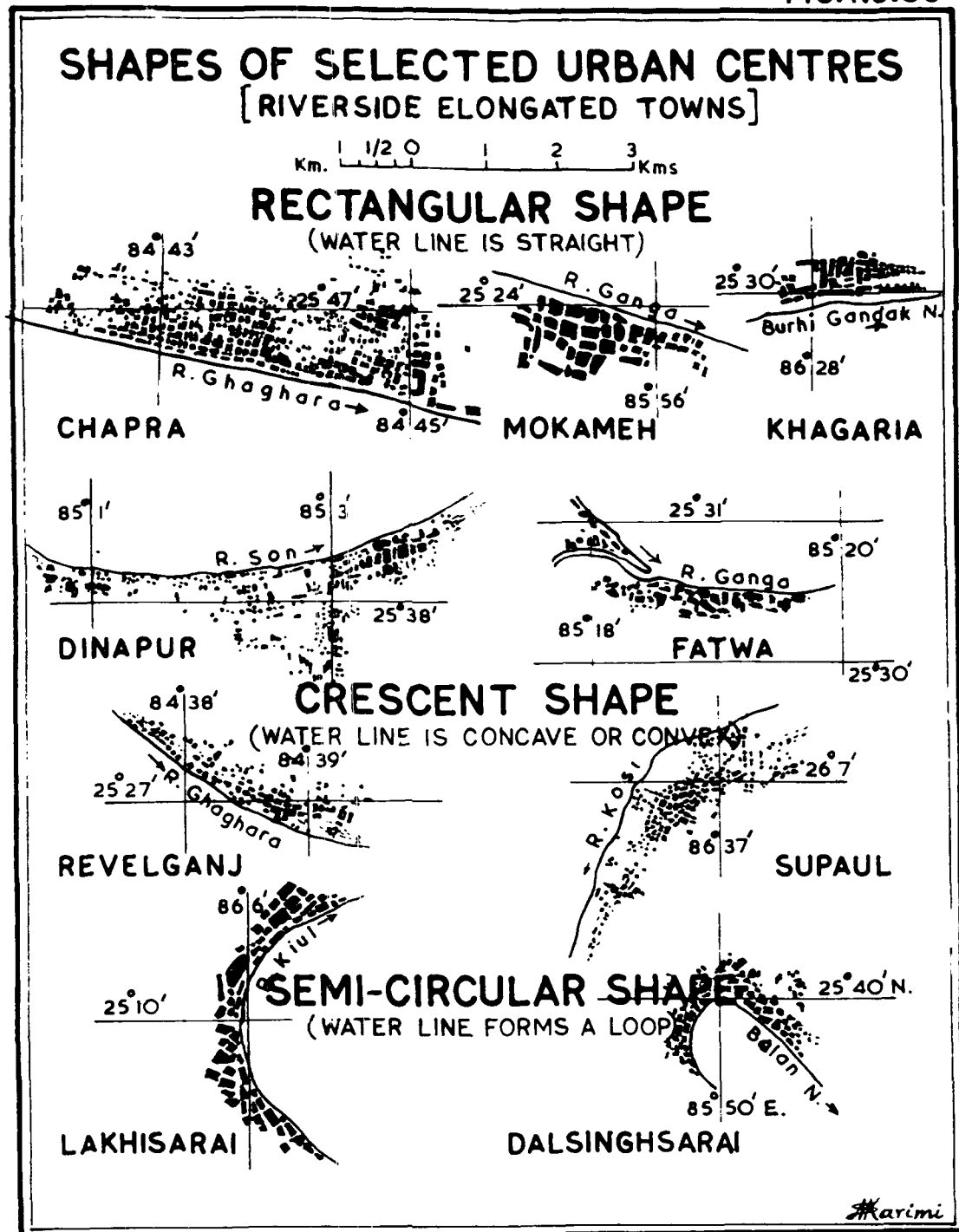
Linear or Elongated Towns :

In the case of several towns it is seen that one of their axes is greater than the other, indicating clearly that there are some factors which have encouraged the settlements along the longer axis and there are other factors at the same time which have restricted the growth of the towns in the other directions. Amongst the notably elongated towns of Bihar Plain are Patna, Chapra, Darbhanga, Gaya, Bhagalpur, etc. Most of these towns are elongated because of the rivers. Patna extends along the river Ganga for more than 20 miles from Dinapur to Patna City and is indeed growing into a great conurbation to include even Maner in the west and Fatwa in the east. The city of Patna in this way compares well with the elongated 'Calcutta Conurbation' that is growing rapidly along the river Hooghly. Darbhanga on the old channel of Bagmati, Chapra on Ghaghara and Bhagalpur on the Ganga are other examples of elongated towns mainly due to rivers.

Now the rivers work as elongating force in various ways. In a depositional plain like Bihar, the rivers are generally associated with levees. They are known as dry points in the sense that while at the time of floods the entire flood plain is inundated, these levees remain above water. These are

uplands which derive their sediments from the streams, so that they are narrow and long. Generally the land away from the levee is at a lower level and is filled with flood water by the back-flow of the water from the stream itself, so that the land away from the levee is generally water-logged, flooded and unfit for building. The southern high banks (natural levees) of mighty Ganga sloping afford the development of such linear levee towns. These are usually not more than 2 miles wide and are intercalated with nodular deposits and such situations are definitely advantageous. The best examples of such high-bank elongated towns are Barahiya, Barh and Bhagalpur (Fig.6). Barahiya occupies a site which is some 5 - 10 metres higher up the surrounding region between the Ganga and the Mokameh Tal. Similarly Sultanganj town and Bhagalpur city are both settled along the high kanhar-intercalated ridge of upland between the Ganga in the north and the Chandan Tal in the south. The river works as elongating factors in several other ways also. As a source of water supply the buildings will try to be as near as river bank as possible. This will help elongation. Then the water frontage has its scenic advantages also. This will also help elongation. Till recently in history and to some extent even now, the rivers have been the most important line of communication. The Ganga, the Son, the Gandak the Ghaghara and even the Hosi maintained their supremacy as the main artery lines and specially in the medieval days were notable navigable rivers. Riverian sites on the banks of the rivers in this way were most naturally selected for the establishment of the early towns, both because it ensured the

FIG. NO.50



SOURCE :- SURVEY OF INDIA SHEETS Cf. FIG. 1.

supply of drinking water and also because the rivers furnished the principal means of transport and communication specially when, except for a few military routes, roads were few and far between. The drinking water facilities and the commercial and scenic significance of these rivers induced 'River Frontage Towns'. A long line of built-up area dominated the urban landscape along the river fronts and the towns in course of time assumed, 'Elongated Shape'. The elongated shape of the towns like Patna, Fatwa, Barh, Mokameh, Bhagalpur, Sahibganj and Rajmahal on the Ganga; Revelganj and Chapra on the Ghaghara; Dinapur on the Son, Darbhanga on the Bagmati, etc. is thus obvious. The river frontage of such towns is still studded with country boats or steamers for ferry services, so that a large portion of such towns even to this day depend on these rivers (Fig.50).

But it will be perhaps not quite out of the way if a brief mention is also made of the sites that were subject to precarious conditions owing to the vagaries of the rivers. Most of the river towns have decayed too. The ruins of such a river-side town may be either sudden or gradual according as the river quickly or slowly changes its course or gradually dwindles away. The main stream of the Ghaghara (the Saryu or Gogra) once touched the town of Chapra. The Ganga flowed close to Bhagalpur and Rajmahal so that these sites were the strong-point towns during the days of early British Supremacy. The Kosi with its torrents flowed past Purnea which in the 18th Century was the headquarters of a military Governor who could put an army of 15,000 men into the field and which, about hundred and fifty

years ago is said to have covered an elongated space from north to south equal to more than half of London then.² But due to the westward shift of the main channel of the Kosi, the town is associated today only with the abandoned channel containing only a small sluggish stream.

With the lapse of time the river tending to more aggradational action cause a marshy and unhealthy land-scape. The rivers become sluggish and flood plains broaden and the deposition of sand over them is common. The silting of its intake deprives it of a supply of fresh water and it consequently shrinks in volume and gradually deteriorates. Rivers in such a graded land-scape get choked with vegetations and become almost useless for navigation; while the drainage of the locality is obstructed and malarial fever spreads over the immediate river frontage area. Such rivers are either getting extinct or have become extinct and the towns along them have no vitality. This is very true of most of the riverside towns of North Bihar. Some rivers like the Kosi or even the Son due to their westward shift have left³ aside sands and chauras and have caused the towns to decay.

2. O'malley, L.S.S.- Census of India, 1911, Vol. 5 Part I Report (Calcutta 1913), page 26.

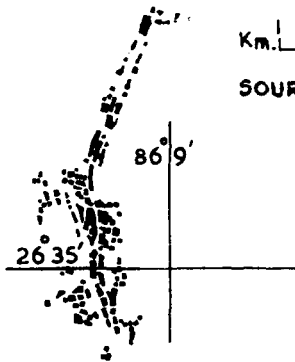
3. It is rightly observed by Arden Wood, W.H. that 'India is a land of deserted cities'. 'There is scarcely a district,' he observes further, 'on the alluvial plain that has not its mounds small or great many of which mark the sites of places of ancient fame and take one back to epic times of India'- Wood, W.H. Arden - 'River & man in Indus-Ganges Alluvial Plain', S.G.I. Vol. 40, Jan 1924 (Edinburg 1924) page 3.

FIG. NO.51

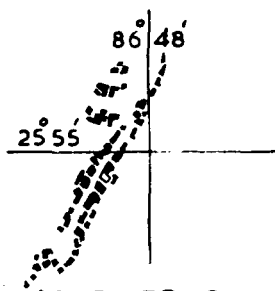
SHAPES OF SELECTED URBAN CENTRES ROADSIDE ELONGATED TOWNS

Km. 1/2 0 1 2 3 Kms

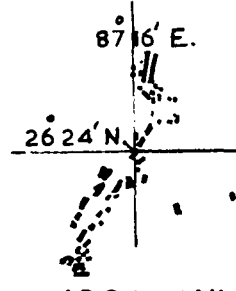
SOURCE :- SURVEY OF INDIA SHEETS of FIG.1.



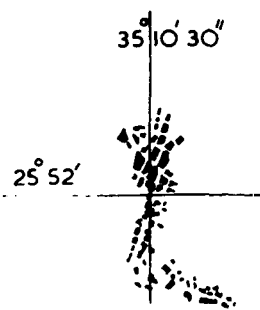
JAINAGAR



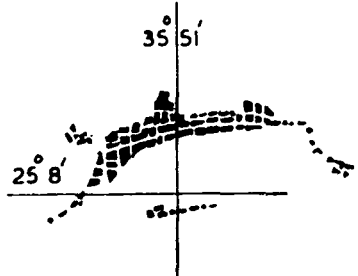
MADHEPURA



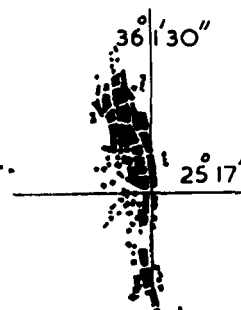
JOGABANI



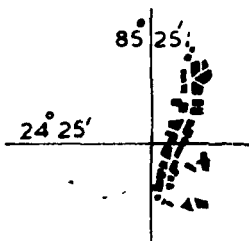
LALGANJ



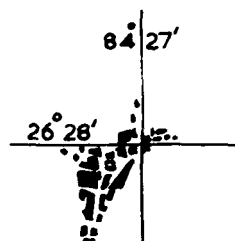
SHEIKHPURA



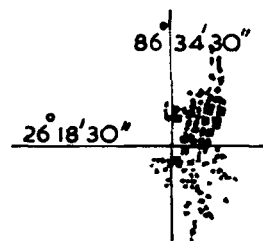
BARAHIYA



HISUA



GOPALGANJ



NIRMALI

Chapra once so busy along the Ghaghara is almost neglected along the ghats which is now filthy and malarious. Rajmahal was similarly deserted as the Ganga went on changing its course from close at the walls of the city in 1640 to almost half a league off in 1666 as stated by Tavernier, and is to-day still far off. Once the capital city of Bengal Subah of Akbar and a city crowded with merchants, Akbarnagar (Rajmahal) is now insignificant owing to the diversion of the river. Even the principal city of the region, Patna during the late Medieval period was an important river-side city and stood on the confluence of the Ganga and the Son. But the advantage of this site was lost due to the westward shift of riverSon which now joins the Ganga some 24 kilometres further upstream.

A number of towns specially in the interior areas away from the rivers, have also been elongated because of the pull of roads. Generally in low-lying areas the roads become a prominently elongating factor because the surrounding country is over-moist and liable to floods while the roads are associated with artificial uplands. At terminal railway stations such as in the moist terai belt along the Nepal border, such a form of town is not uncommon where the railway line and the roads afford suitable sites for the merchants and traders for their shops on either side of the communication line. Jogabani, Jainagar etc. present the shape discussed above (Fig.51). Examples of

4. O'malley, L.S.S.- Census of India Report, 1911, Vol.5
(Calcutta 1913), page 25.

other elongated towns because of some roads passing through them are Siwan, Lalganj, Gopalganj, Aurangabad, Hisua, Begusarai on the Tirhut Road (now known as National Highway 31) and Jamui, etc. Jamui is a road-side elongated town which consists for the most part of one long street forming a continuation of the Sikandra-Kharagpur road.

The elongated towns specially those developing along the bank of a river or a lake show peculiar shape as regards their external form. Usually when the water line is straight and is backed by some parallel inner line of communication such as a road or a railway line, the shape is usually rectangular (Chapra, Mokameh). Sometimes when the water line shows a curved loop the outer form may only show an arc-like formation with convex or concave form towards the water front. Concave external form is exemplified by the city of Bhagalpur, western half of Patna, Dinapur, Fatwa, Sultanganj, Lakhisarai and Dalsinghsarai. Here Dalsinghsarai on the left bank of Burhi Gandak and Lakhisarai on the left bank of river Kiul, because of the sharp curve in the course of the rivers shows almost semi-circular or crescentic shape. Such towns with a concave shape along the water front facilitate a panoramic view of the whole town from either corner. Amongst the towns with convex form towards the river side are Sunaul on the left bank of the Kosi, Revelganj on the left bank of the Ghaghara and the eastern part of Patna along the Ganga from Gola eastward to Bagh Jafar Khan to the eastern most limit of the city. Because of the convex nature of the outer form along the water front, the intervisibility from

either of the corners for the whole length of the city or the town becomes difficult.

Square and Rectangular Towns:- Probably the largest number of towns are more or less rectangular or square in their external shape of the ground plan. There are various reasons for it. If we cast a glance at the pattern of architecture in ancient and medieval periods, we know that the old town planners first determined the cardinal points of the compass and built the towns and streets accordingly. The natural result was a rectangular or square pattern. Moreover the rectangular or square street pattern and rectangular or square town plan is generally found to be convenient plan. Once a rectangular or square nucleus has been established the further growth of the town will be the enlargement of the same on all sides unless there are some restrictive forces. Now in a plain surface like North Bihar Plain the surface is commonly uniform; there are no restrictive forces in the case of many towns and thus they maintain their rectangular shape. Another factor contributing to such a form is a rectangular fortifying wall, so characteristic of the past ages. By the passage of time such a wall might have disappeared from the site but so long as it existed, it made the town rectangular in shape and the subsequent growth has been in many cases an enlargement of the old shape. A planned town was built by Sher Shah around his rock fort, along the Ganga, so that the city of Patna was walled on all sides by Azim-us-Shan and Haibatjang

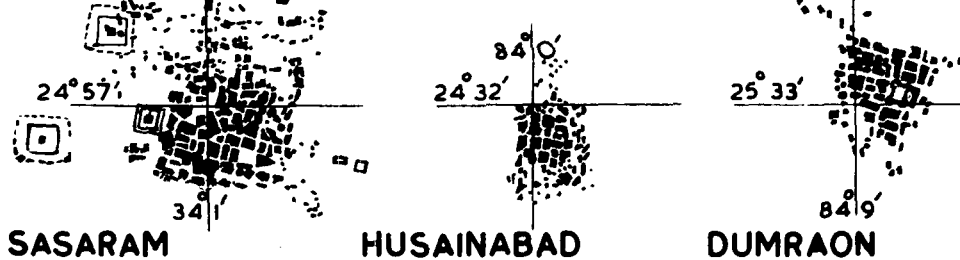
FIG. NO.52

SHAPES OF SELECTED URBAN CENTRES TOWNS INFLUENCED BY CULTURAL DOMINANTS

Km. 1/2 0 1 2 3 Kms.
SOURCE: SURVEY OF INDIA SHEETS Cf. FIG. 1.

SQUARE SHAPE

TOWNS DEVELOPING AROUND A FORT OR A PALACE



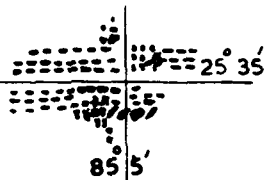
ROUNDED SHAPE



BETTIAH (Pivot-Palace of Bettiah Maharaja)

RECTANGULAR SHAPE

DELIBERATE RECTILINEAR PLANNING



KHAGAUL
(Railway Colony Towns)



JAMALPUR

TRIANGULAR SHAPE



FORBESGANJ

BARBIGHA

Karimi

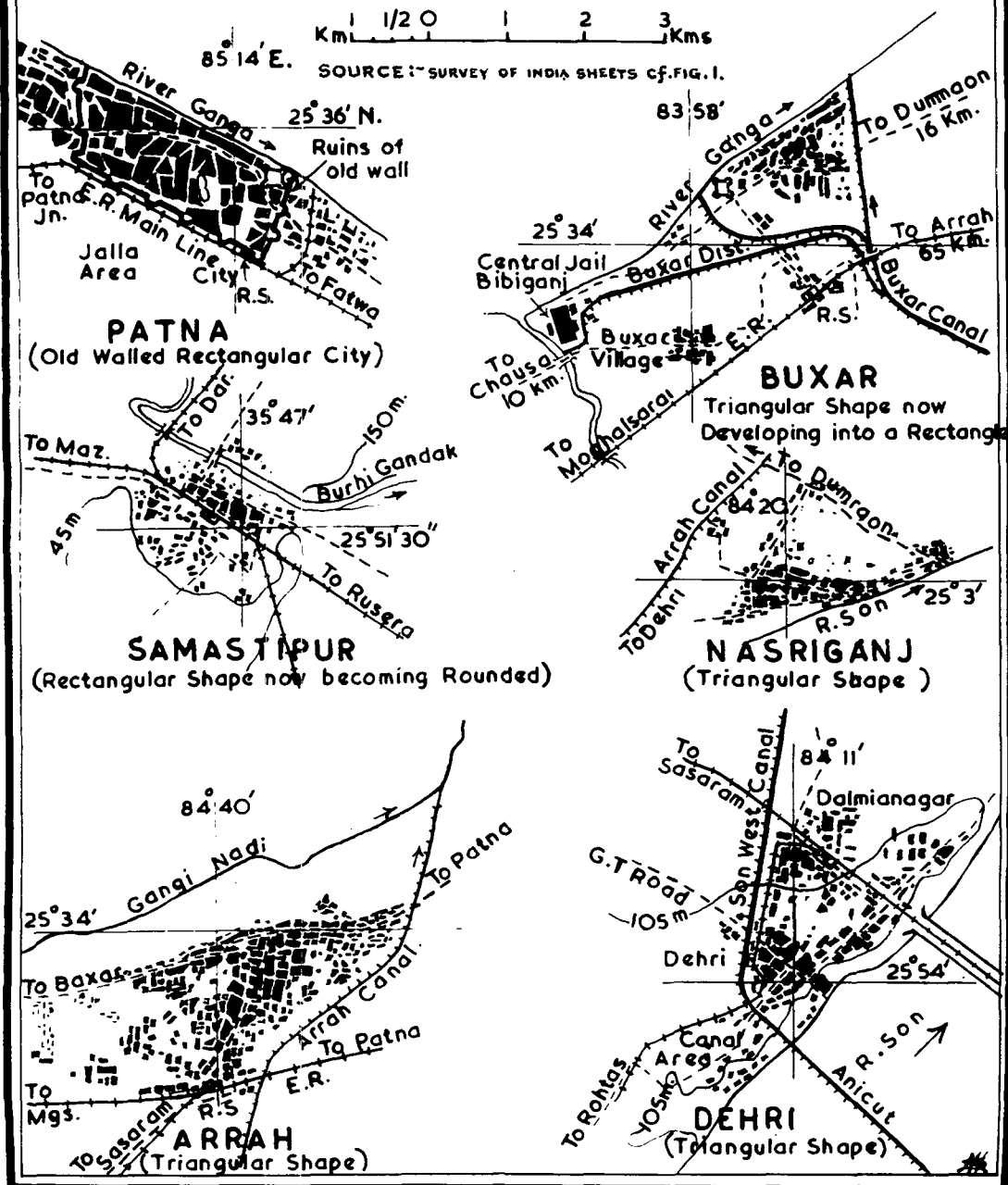
Moghal Governors of Bihar to give a rectangular shape (Fig.53) and which contained two important gates in the eastern and western walls popularly called 'Purab Darwaza' (Eastern gate) and 'Pachchim Darwaza' (Western gate). Similarly Odantapuri (Dand Vihar), the popular city and capital of Gopala was also a fortified city square in shape having gates to the northern and southern walls. Monghyr is yet another example of a rectangular city situated along the Ganga which owes its present shape mainly to the rectangular fort the walls of which were constructed by Prince Danyal. Dumraon and Sasaram are typical examples of square shape. They owe their growth to all the sides of the palatial house of raja of Bhojpur and Hasan Khan Sur respectively (Fig.52). As the palaces forming the main pivot of the settlement in each case were square in shape the external form has also been square in ground plan.

In some cases the rectangular or square form of town has originated on some crossing of roads and the resulting pattern has been mostly rectangular. Examples of such rectangular towns are Aurangabad, Hissua, Jamui, Nawada, Begusarai, etc. The square or the rectangular shape in some cases is again mainly the result of some deliberate planning, and depends much upon the chequer-board or grid pattern (parallel roads at rightangles to each other). The railway colony settlement areas at Khagaul, Jamalpur, Jhajha and Katihar show such shapes. The civil lines or modern sections of most towns where Government offices etc. occur also show the same character, so that the Sahibganj area

FIG. NO. 53

SHAPES OF SELECTED URBAN CENTRES

TOWNS INFLUENCED BY BOTH PHYSICAL & CULTURAL FACTORS



in case of Gaya city, Purnea court area in Purnea, cantonment section of Dhanpur town, etc. are urban agglomerations of rectangular shapes.

Rounded or Circular Towns :- The shape afforded by towns that have developed at focal points of roads is usually rounded or circular. In such cases there may evidently be some attracting cultural site such as sacred spots like a temple or a dargah (tomb of some muslim Sufi saint). In some cases it may be a vihara (monastery) as in ancient days or a madrasa (oriental seat of learning) as in late Medieval period or a school or college today. The house of some zamindar, a palace of a local raja, the chawk (business area) or even a bus centre from where streets may appear to radiate in various directions may also give the same form to the town. The present Patna capital area with its pivot as the governor's house, Bettiah town (fig.52) with the house of raja of Bettiah as the main nucleus afford suitable examples of rounded or circular shape.

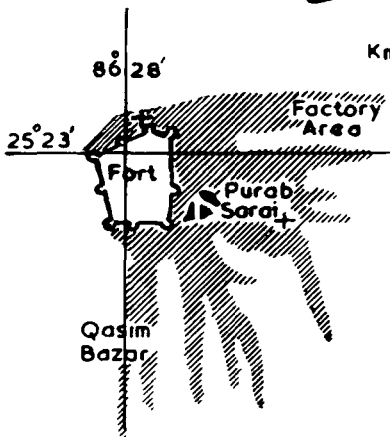
Triangular Towns :- When the growth of an urban centre is controlled by rivers, roads and various cultural dominants at one and the same time, a variety of shapes is produced. The triangular shape is one but this pattern or form is rather uncommon and results owing to abnormal factors in the site which restrict its expansion. In the normal way this is found where towns appear to have grown along a road, where another road meets the former (Forbesganj) (Fig.52). This is also the case where a road meets a river (Masriganj) In certain cases

SHAPES OF SELECTED URBAN CENTRES

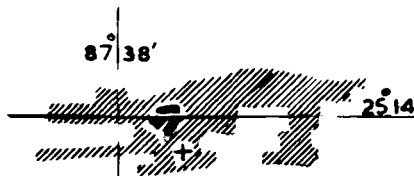
[CONTROLLED BY VARIOUS FACTORS]
TOWNS TAKE PECULIAR SHAPES

▲ City Chowk or Bazar + Railway Station

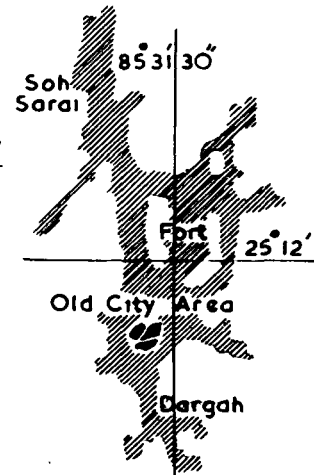
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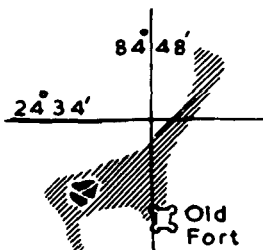
MONGHYR



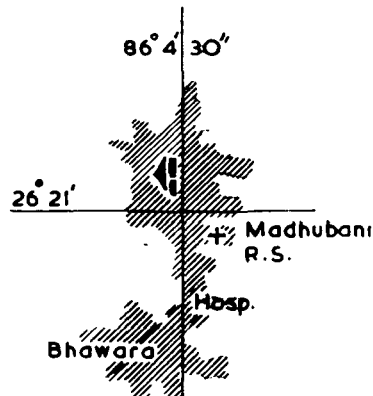
SAHIBGANJ



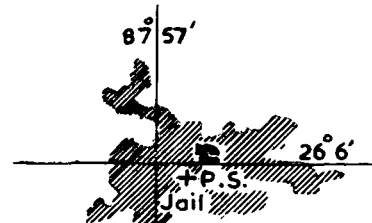
BIHAR



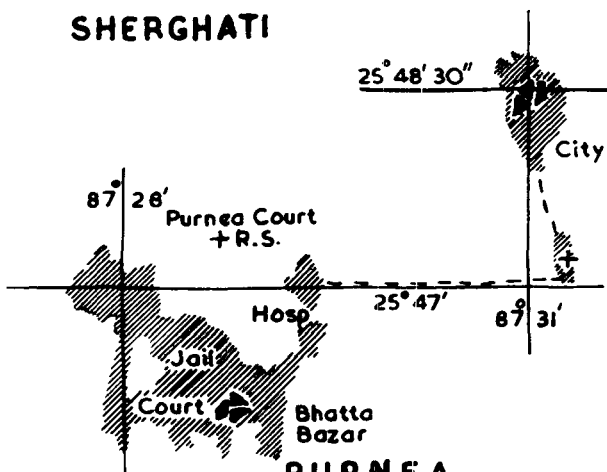
SHERGHATI



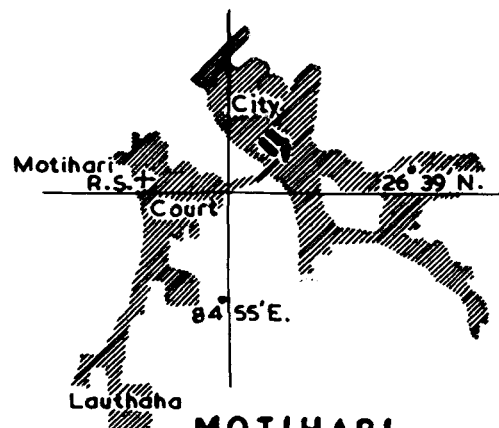
MADHUBANI



KISHANGANJ



PURNEA



MOTIHARI

SOURCE:— SURVEY OF INDIA SHEETS Cf. FIG. 1.

Karimi

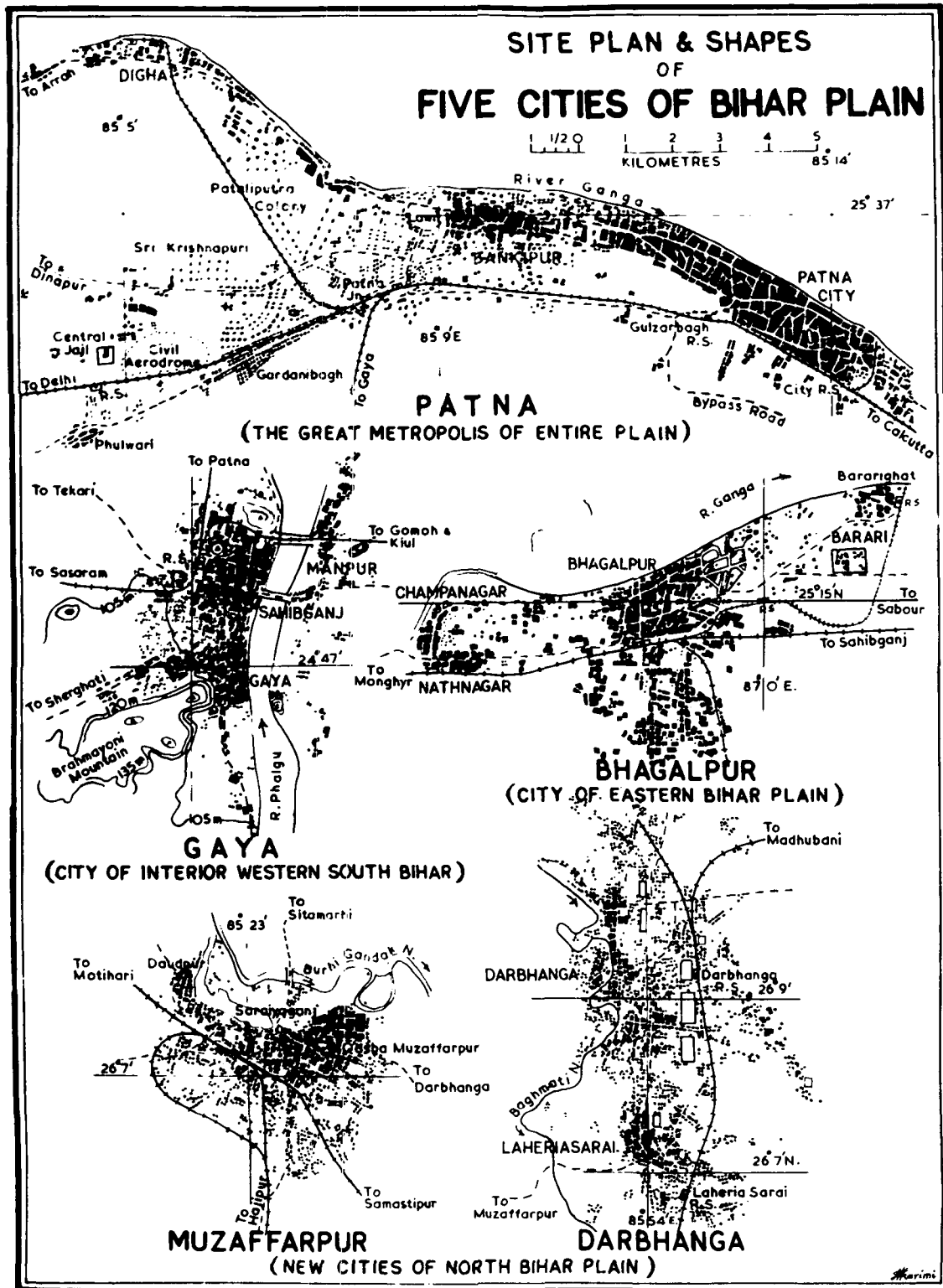
some restrictive forces of the site appear to play a dominant role for the towns to assume such a shape. Arrah and Hajipur are notable examples. The Gangi nadi in the north, Arrah canal in the east and the main line of the Eastern Railway in the south, acting as the three sides of a triangle, bound the triangular growth of Arrah town (Fig.53). Bounded by the Gandak river, (NW-SE), the North Eastern Railway line (running from S.W.-N.E.) and the lowlying chaur lands in the east from north to south, Hajipur town also affords a good example of a triangular shape.

Double-towns :- These are such towns where the built-up area of the settlement consists of two parts. They are so close together that geographically they may be included in a single town group or may be considered as a single town. Such towns show distinctly separate sections and there is a definite gap of unbuilt land between the two. In a general way most of the Indian towns or those of Bihar began to develop as double towns during the British regime, when the British built adjoining the old town a separate well-planned and spacious section containing administrative offices and fashionable residential areas. But this area known as civil lines was not far away from the larger centre of population which contained the market and industrial locations and which was known as the native town. In course of time the mutual expansion of the old and new sections of the towns such as New Patna and Patna city, Dinapur Cantonment and Dinapur municipality; Dinapur railway colony and Khagaul, have merged with each other and the double town phenomenon does not

exist as a physical fact of the landscape and may exist only in the difference of buildings, plan and functions, etc. There are however, still many towns where the double town phenomenon even now exists. A subsidiary town has grown at the close proximity of some important urban centre. The smaller urban unit shows only a tail-like growth and suggest future possibility of its becoming agglomerated with the bigger centre. Examples of the such double towns are Bhagalpur-Sabour; Monghyr-Jamalpur; Sitamarhi-Dumra; Motihari-Lauthaha; Chapra-Revelganj; Purnea city-Court area, Patna Dinapur etc. The double town phenomenon will however, continue to exist when there is a physical barrier to separate the two parts such as the Gandak between Hajipur and Sonapur; the Son between Nasriganj and Daudnagar and between Dalmianagar and Sone-nagar; Phalgu between Gaya and Manpur, and so on.

Irregular or Amorphous towns :- It is but natural that in a country, where in the recent and medieval past, urban planning was not quite in vogue, many towns should be irregular or amorphous (without any form) in shape growing according to facilities available with respect to the physical site and nature of the communication lines, etc. Most towns in general present a complex shape, so that externally they appear to assume an irregular form. This is specially apparent when we consider the city and major towns as a whole. The various sections developing at various stages, may show distinction when viewed singly but when the town is viewed as a whole the local sections lose their distinction and the form and plan

FIG. NO.55



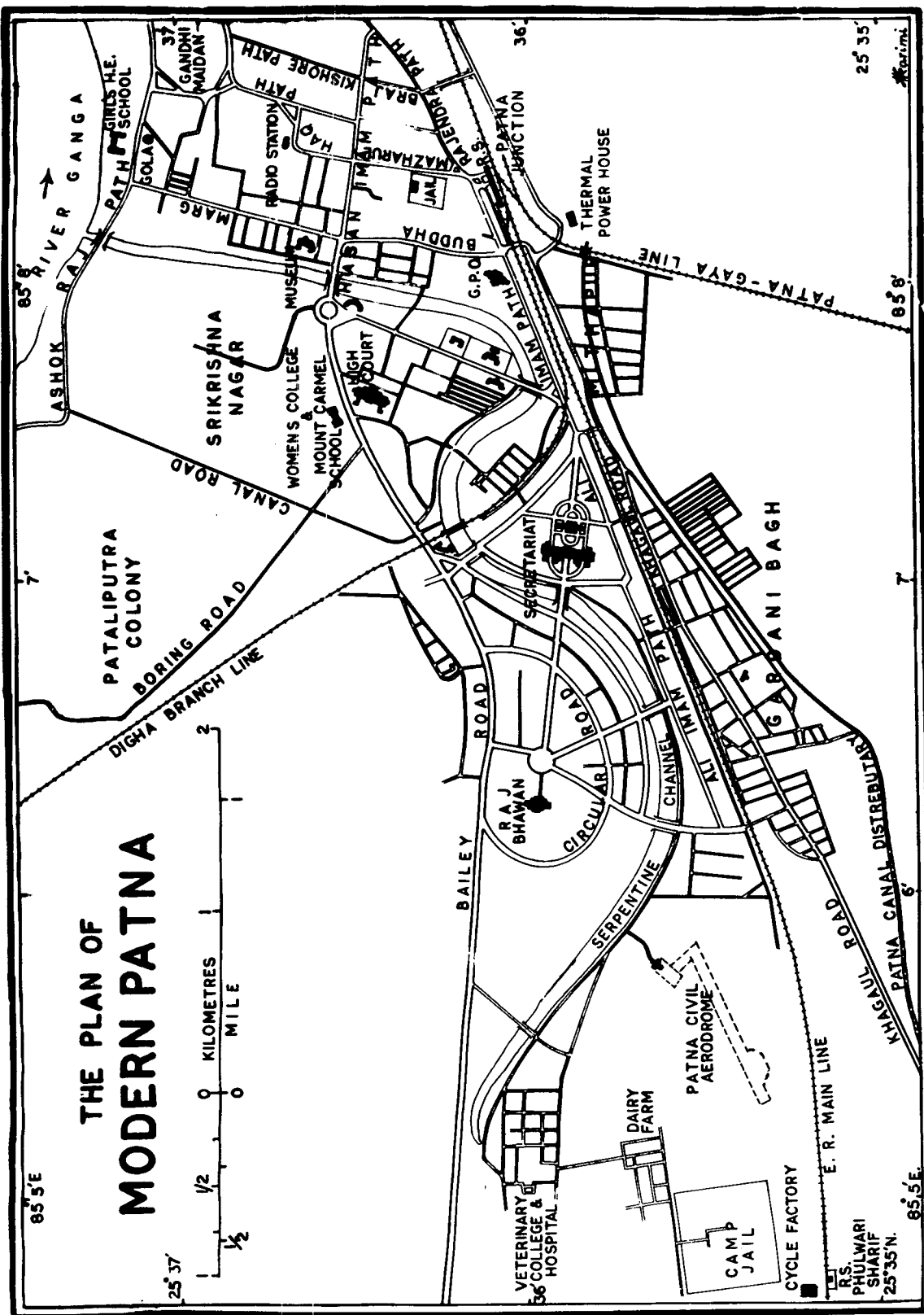
SOURCE :- SURVEY OF INDIA SHEETS OF FIG. 1.

becomes almost complex. In certain cases the irregularity is because of the detached sections that appear as satellite sections of the towns. Such is the case which we find in Hajipur, Bihar Sharif and Rajmahal. We are aware of the fact that these towns during the late medieval period were once vast flourishing cities, no less than the capitals of Bihar and Bengal. Hajipur founded by Shamsuddin Mahmud (Haji Shah Ilyas), King of Bengal was the capital of the portion of Bengal lying north of the Ganga. According to the accounts of Abdul Latif and John Marshall it appears that the city once extended as far as present Lalganj town in the north and to Mahnar town or Hazrat Jandah in the east. But due to calamities like flood, fire or for other reasons they have now decayed or lie in ruins and are occupied by non-urban landscape in between. Similarly Bihar sharif, capital of Bihar during early Muslim period was a city with notable mohallas like Inadpur, Amber, Daira, Chistiana, etc. in it but these areas although lying in the present boundary of Bihar municipality show only detached sections of urban agglomeration and a great variety of external form as found in them, so that the over-all picture is rather too complex.

Inspite of its complexity sometimes peculiar shape are also recognised in certain cases. The present form of the city of Patna is like a sword with its handle corresponding to the new capital area in the west and the pointed tip ending at

5. It was a flourishing city and contained in the hey day of its glory 360 mohallas.- Prof. Sachidananda - 'Some Islamic remains at Hajipur' Homage to Vaishali, (Luzaffarpur 1948), page 169; Hunter's S.A.B. Vol. 13 (London 1872) page 71.

FIG. NO. 56



SOURCE :- MAP OF PATNA ADMINISTRATIVE COMMITTEE, GOVT. PRESS, (PATNA 1946)

Bagh Jafar Khan in the extreme east while the edge of the sword⁶ corresponds to the bank of the Ganga itself (Fig.55). Purnea resembles a reclining monkey with the court area as the main body and the linear settlement site of old city forming the long tail. (Fig.54) Mokameh on closer examination gives the idea of a pistol.⁷

INTERNAL LAYOUT (Street Pattern) - Internally the towns show a great variety of form on account of the way in which the streets and the settlement blocks in between the streets are laid down. This like the outer form depends much upon the physical and cultural factors with which a town may be associated. The historical antecedents of the region, however were probably the main factor in the street plans of almost all the towns. The pattern varies from town to town and again from section to section as a consequence of the immediate site condition and to the gradual growth and development of the town as a whole (Fig.56). The internal town plans of the Bihar Plain show interesting relationship with the sites and other cultural features. Some of the patterns as evident in them are discussed below :-

Irregular Plan :- The internal layout or the street plan of most of the towns and specially those that are associated with some past historical antecedents of the region, appears to be

6. Ahmad, E - 'Planning Patna', Patna University Journal, 1953 (Patna 1953) page 39.

7. Other interesting shapes of the towns include a ziraft (Sherghati), a microscope (Biharsharif), a crocodile (Sahibganj) the lions or a court of arms (Lotihari) and a dragon (Kishanganj). (Fig.54).

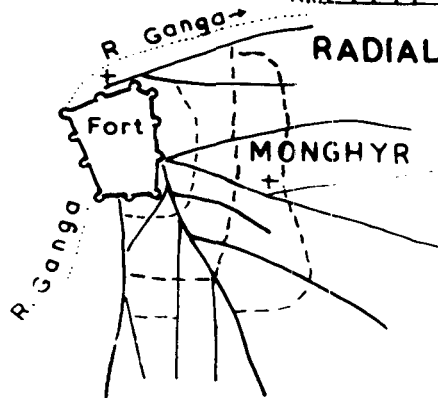
rather 'irregular'. The layout of the streets in such old towns or where an old section still exists, is compact, being narrower and irregular towards the core (i.e. the main chawk or the citadel, the fort or the palace). This was deliberate, for the narrowness or compactness of the roads offered greater resistance to attacks. Even the modern 'focal towns' at road crossings specially in the interior plains (Purnea, Muzaffarpur, Gaya) or from where roads appear to radiate in various directions, generally show the same congestion. Here some cultural dominant forms the central core where the streets appear to converge. The central place of attraction may appear as a square or triangular area. Such a 'radial pattern' has both its advantages as well as disadvantages. The advantage is that the movement between the centre and out-skirt is by the shortest distance and is free from crossings and accidents. The disadvantages are that there is an abnormal congestion of traffic as we approach the central core of the town.

A modification of the radial pattern is the 'Cobweb pattern' where concentric streets are added to the radial lines of streets. The result is that the disadvantages of the radial pattern are lessened. In such a pattern there is obviously some focal place such as the government house or the secretariat building of New Capital of Patna or the palace of a local raja as in Bettiah town, serving as the main nucleus from where the streets radiate in all directions. A number of other by-lanes or streets may also inter-connect them and many in some cases assume circular pattern such as at Patna due either to cultural

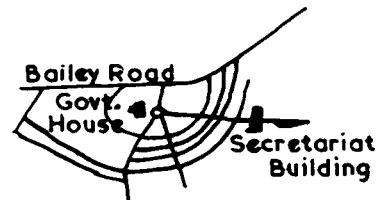
STREET PLANS OF SELECTED URBAN CENTRES

+ Railway Station Fort ■ Other Notable Building

Km. 1/2 0 1 2 3 Kms.

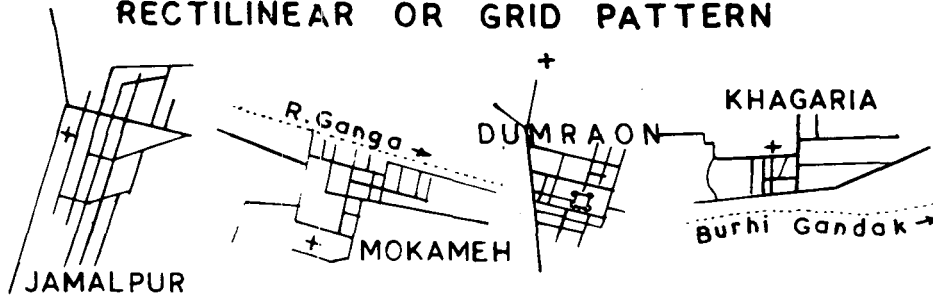


RADIAL & COBWEB PATTERN

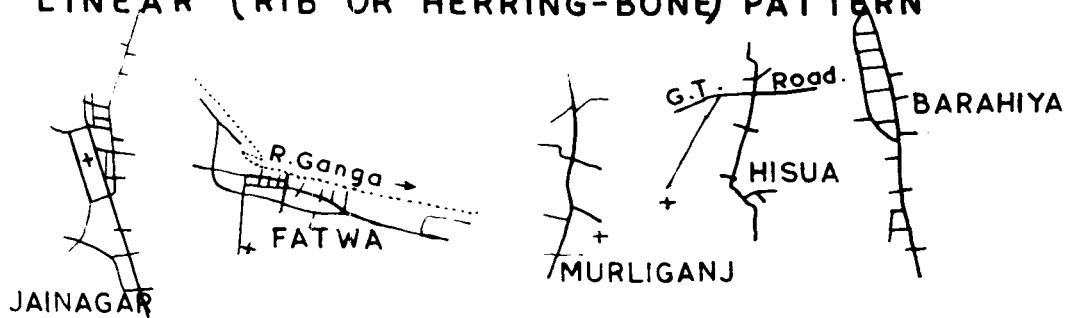


GOVT. HOUSE AREA
NEW CAPITAL, PATNA

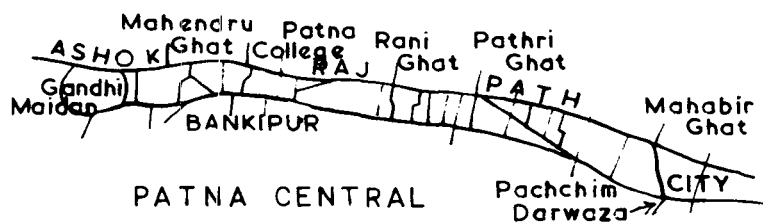
RECTILINEAR OR GRID PATTERN



LINEAR (RIB OR HERRING-BONE) PATTERN



LADDER PATTERN



SOURCE :- SURVEY OF INDIA SHEETS Cf. FIG. 1.

Harini

site (e.g. Government House or Secretariat Building) or on account of some physical factor (e.g. curved course of Serpentine nala).

Regular Plan :- The right angled mesh of streets, known popularly as 'chequer or chess board or grid iron plan' with or without a central rectangular chawk or market place or any other cultural dominant is perhaps another obvious plan in the towns of Bihar Plain. Here usually a number of main roads cut each other at right angles in a regular way with a number of other streets in between. Such a rectilinear pattern of streets in case of Sasaram, Dumraon, Tikari, etc, is because of the square or rectangular palaces or forts in them, about which the settlement in course of time grew in all directions in keeping with the original form of the palace or the fort (Fig.57). Such a regular plan of street is also met with in specially the ancient (Odantapuri or Dand Vihar) or Late Medieval (Azimabad) walled cities. Here also it appears that the ancient or medieval town planners first determined the cardinal points of the compass and built the fortification walls accordingly. The main street in this way followed the line joining the two corresponding gates opening upon the great Shahrah (royal highway) leading to other notable towns. In the case of the interior centres however, the city gates were located along the northern and southern walls

8. Ali, S.H. - 'Towns of the Indian Desert' - Proceedings of International Seminar in Geography, (Aligarh 1959) page 298.

while the cities in the Ganga riparian tract such as Patna, etc. had gates in the eastern and western fortification walls. The main street in such walled cities of the south Ganga strip ran from west to east in true alignment with the main communication artery of the region leading to imperial or federal capitals in the west and other capital towns in the east. This set of arrangement of main street with respect to gates and other streets running roughly parallel to or at right angles to them, in this way, resulted in what can be termed 'grid or rectilinear pattern'. Sasaram, Tikari, Husainabad, Mokameh, Dinapur, etc. are good example of such a pattern.

In such a plan, the different parts of the town are independently connected by straight roads. There is no congestion of traffic in the centre. But there are certain disadvantages too. The distance between the central core and the outskirts is lengthened while maximum of crossings in such towns may cause accidents.

Linear Plan :- Many towns in Bihar Plain show 'Linear Plan' where a single street dominates the entire townscape. The houses in them are concentrated mainly along each side of the main highway which provides the main attractive site for dwelling as well as for business purposes. Usually a few temples or mosques may also frequent the road side. In course of time many by-lanes appear to have joined the main street roughly at right angles so that the ground plan of the street takes the form of 'rib or comb or herring-bone pattern'. The linear-

shaped towns at the railway terminus along Nepal border (e.g. Jogabani, Jainagar etc.) or elongated road side towns (e.g. Hisua, Bagaha, Sheikhpura, Bikramganj, etc.) or towns along the natural levees or high banks of rivers (e.g. Barhiya) show such a pattern. The rib pattern is also evident in almost all the elongated river frontage towns where the main street as axial to the plan usually runs parallel to the water front with many by-ways abutting directly to the river ghats. This can be exemplified by the development of many ghat roads to the north from the main road (Ashok Raj Path) in case of Patna, Patwa, Barh, Sultanganj and Rajmahal along the Ganga present the same type of herring bone or rib pattern in their internal layout of the streets.

A variant of the grid pattern on the one hand and the herring bone or rib pattern on the other, is 'ladder pattern'. This is common in most of the river side or other interior towns where two parallel roads run across the whole length of the settlement area. The two main highways in course of time are crossed by by-way running roughly at right angles to them. This is specially the case in Gaya while the section of Patna Central between Muraipur and Pachchim Darwaza is also another good example of a ladder pattern. (Fig.57).

Build & Structure - Masonry (pukka) buildings such as stone or brick houses often plastered with mortar, predominate in cities and major towns. But these decrease both in size and number with the decrease in size and importance of the town.



No. 14
 Sher Shah's tomb, Sasaram - One of the noblest
 specimens of Pathan architecture in India.



No. 15
 Stone mosque (Sangi Masjid), Phulwarisharif (Inside
 view) - The stone was brought from Agra and was
 built by Amir Ataullah who was in the service of Sher Shah



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 Stone mosque (Sangi Masjid), Phulwarisharif (Inside
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There is striking diversity again in their size and structure depending upon the status, taste and faith of the owner. But their small frequency in most towns is due to the fact that the entire alluvial plain lacks hard crystalline material except for the little quantities available from the minor stone quarries along the Suneswar and Dun ranges in Champaran district in the north or along the northern face of the Bihar Plateau in the south. Even coal which is so essential for the manufacture of bricks can be imported only at a high cost from the plateau region that lies far to the south. The unbridged part of the Ganga except for the Rajendra Bridge at Mokameh is again a set back to the easy movement of both coal and building materials to the towns of North Bihar.

Stone structures are in general lacking except for the occasional old buildings (ancient or medieval) that were constructed by the local chieftains or were so designed and constructed at the imperial orders. Such stone structures include temples, mosques, khanqahs and sacred or monumental tombs and the forts. Many of them are still in good preservation and constitute dominating cultural sites in most of the towns. The stone mosque (Pathar-ki-Masjid) constructed by Prince
10 Farvez, The Khanqah building (oriental seat of learning of Sufi saint) at Rajgir near Nakhium Kund and which owes its construction
11 to Mohammad Toghlaq and the shahi mosque at Arrah constructed

10. J.B.O.R.S. 1932 (Patna 1932) Page 45.

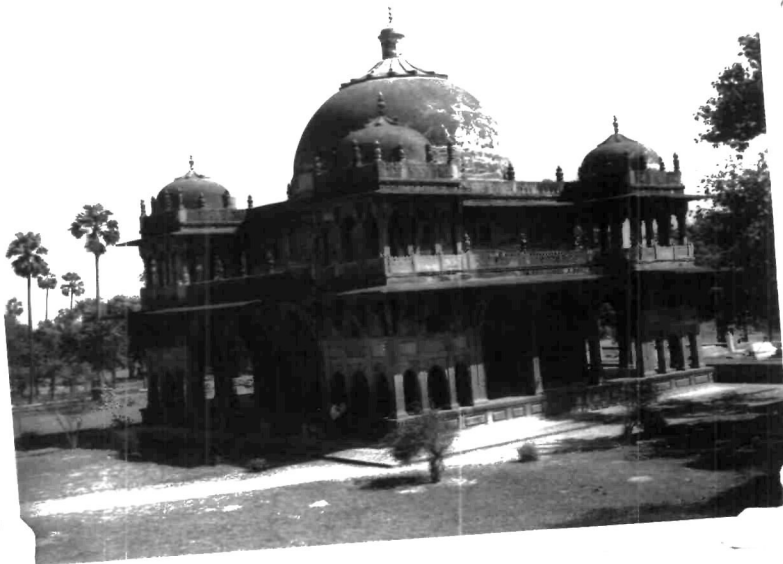
11. J.B.O.R.S. 1917, (Patna 1917) Page 341

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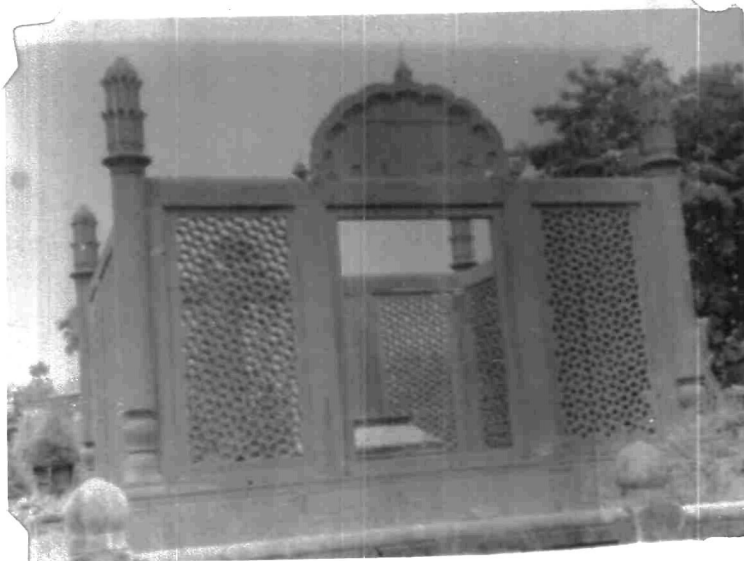
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10. J.B.O.R.S., 1932 (Patna 1932) Page 45.

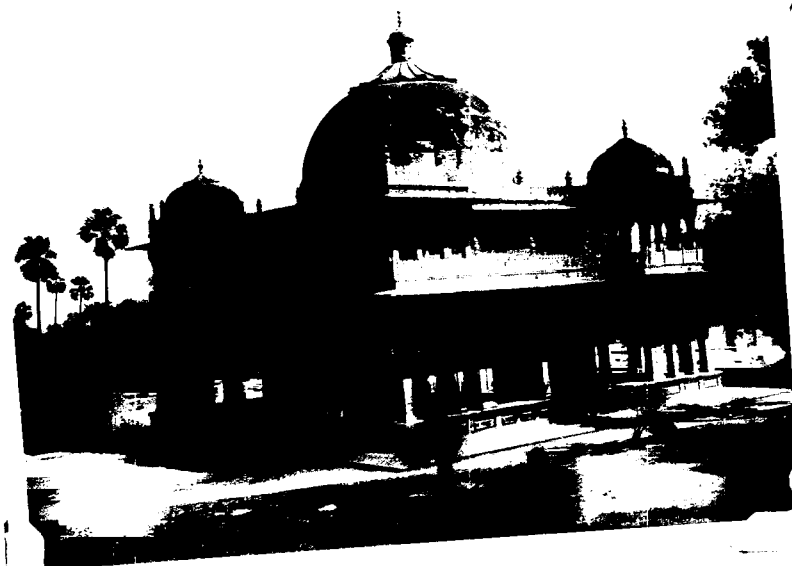
11. J.B.O.R.S., 1917, (Patna 1917) Page 341



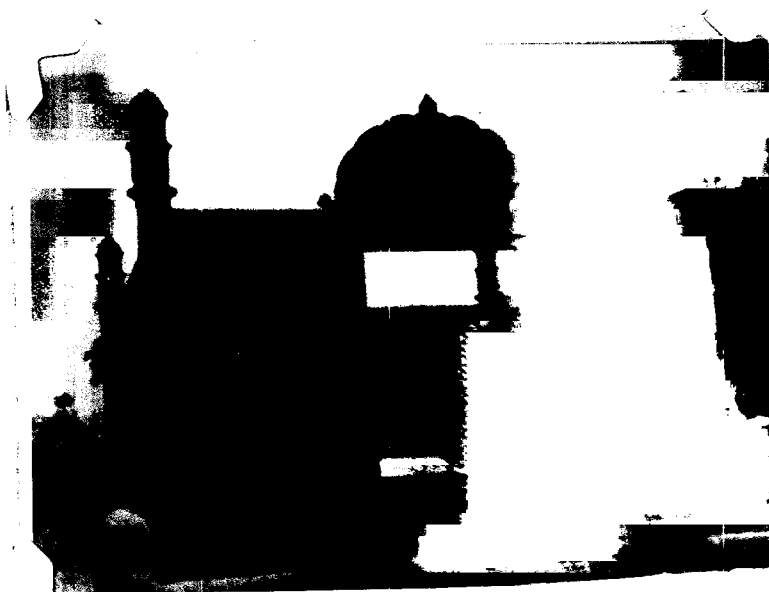
No. 16
Tomb of Shah Daulat (Choti Dargah),
Manersharif - the finest monument
of the Moghals in Eastern India.



No. 17
Tomb of Haibat Jung (Father of Shujaudaula &
Nazim-i-Bihar), Begampur, Patna City.



No. 16
Tomb of Shah Daulat (Choti Dargah),
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No. 17
Tomb of Haibat Jung (Father of Shujaudaula &
Nazim-i-Bihar), Begampur, Patna City.

during Aurangzeb are some of the notable examples. It is said that the red sandstone mosque (Sangi masjid) and the 'madrasa' attached to it at Phulwari was built by Amir Ataullah who was then in the services of Sher Shah. The stones for the mosque was brought down to this place from Agra. The huge fort at Monghyr constructed by Prince Danyal of Bengal in 1497 (a contemporary of Ibrahim Lodi) and Man Singh's 'Sangi Dalan' at Rajmahal are other examples of stone structure still in perfect preservation. Similarly the palatial houses or small forts of local chieftains at Darbhanga, Bettiah, Dumraon, Tekari etc. and the sacred or monumental tombs such as at Bari dargah, Bihar Sharif, at Begampur, Patna or at Sasaram or the temples at Bodh Gaya and Gaya are good examples of pukka (stone-brick) buildings that still form imposing structure in certain towns. The tomb of Shah Dawlat (Choti Dargah) at Maner is of exceptionally fine building with walls containing carvings of great delicacy and high finish and is said to be the finest monument of the Moghals in Eastern India constructed in 1616 by Ibrahim Khan Governor of Bihar during Jahangir. The tomb of Sher Shah at Sasaram town, standing as an imposing stone structure in the midst of a fine tank is again one of the noblest specimens of Pathan architecture in India.

12. O'malley, L.S.S. - Bihar District Gazetteer, 'Patna'
(Patna 1924), page 215.

13. O'malley, L.S.S. - Bihar District Gazetteer, 'Shahabad'
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There is a striking diversity in the size and structure of houses from mohalla to mohalla. The residential section in general, be it a city a major town or minor town, shows predominance of brick-walled houses with sloping roofs usually of tiles, though mud walls with tiles or even thatch roof are also not quite un-common. Modern buildings with concrete roof may also occur. But these appear to increase depending upon the size, prosperity and growth of the town itself. But the dwellings in almost all of them are so mixed up that upto-date masonry buildings of fairly better class people may occur side by side with the poorer mud walled houses. This is specially the case towards the fringe zone of the old towns. The modern developments that have come into existence during British and Post Independence period, however, are mainly of pukka, one storey or two storeys buildings constructed in western style. Many of them have courtyards both inner and outer and are usually surrounded with gardens.

The Skyline - The skyline of the towns by virtue of its nature and appearance tell a good deal about the general townscape. It throws light on the physical background, religion and culture economy and administration. Clock towers, spires of temples, minarets of mosques, green domes, water towers and other edifices always stamp at once upon the mind an idea of particular urban sub-section or an urban centre itself. The urban profile with frequent minarets or green domes suggests some dargah town or a

14. Cleef, E.V.-'The Urban Profile' AAAG, Vol. 22 No. 4 Dec. 1932
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14. Cleef, E.V.-'The Urban Profile' AAAG, Vol. 22 No. 4 Dec. 1932
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No. 18

The skyline of the city of Patna (a view from the Ganga side in the north)



No. 19

The skyline of the city of Patna (a view from the south)



No. 20

The skyline of the city of Patna (a view from the south)

muslim mohalla. Similarly the great Secretariat clock tower or the 'Gola' a huge dome structure i.e. 'Gole Ghar' visible from long distance recalls Patna itself. The spires and pinnacular temples like Vishnupad etc. of the sacred city of Gaya overlooking the Phalgu river require no label for identification.

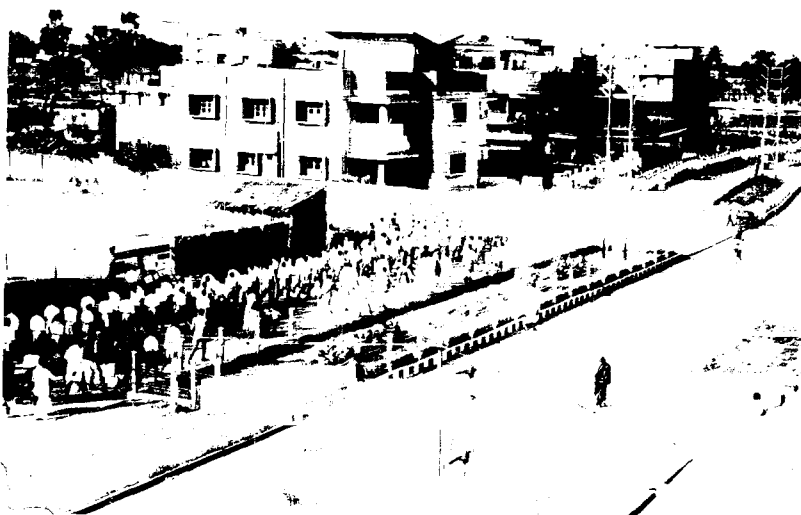
As the area is plain, the skyline of the towns generally shows evenness instead of being uneven as in the case of Jamalpur and Gaya that are situated on the rugged and hilly projections of the Kharagpur hills and the Brahmayoni (Gaya Mountain) respectively. Analysis of several such urban profiles however reveals that most of the towns show rounded skyline because of the predominance of rounded or dome-shaped trees which are the characteristic features of a deciduous vegetation. It becomes more so in a Muslim mohalla like the old Patna city section, Hajipur, Laheriasarai (Darbhanga), Sasaram and so on where the skyline assumes a dome shape because of the frequency of the mosques. But in Brahma Gaya, Bodh Gaya, etc. due to the predominance of temples or in some wards populated by Christians as in Bettiah, the skyline is usually pinnacle because of churches and projected Roman style nature of the houses. Similar is the case in the modern industrial sections of the towns such as the area to the south of the Patna Junction railway station, Dalmianagar area at Dehri, the oil refinery area of Barauni town or the sugar mill towns of Champatia, Sugauli, etc. where the skyline is dominated by towering heights of chimneys. Due to the presence of palmyra trees which are so frequently found in the towns of the Lower South Bihar Plain, the skyline of

these towns is again punctuated with pinnacles here and there due to these trees.

Morphological Zones & the Sub-sections - Towns originating in ancient or medieval days (Sheikhpura) are entirely different from those that have been established or developed in modern period (Dehri). Even within the old towns that have been culturally growing since long (Patna, Gaya etc.) distinct sections with respect to their morphological character are evident. Such towns usually show an 'Old (ancient or medieval) Section' forming the city proper with old city core as its main attraction and the 'modern section' showing a new suburban growth with a new business core and where the settlement has developed on modern lines (Fig.58). Composite nuclei within an urban centre in this way, are the chief characteristic features of Bihar Plain towns. We, may for example, find the main city bazar or chawk and yet within a short distance of this pre-existing business or old administrative core of the city, there may occur a new satellite core due mainly to the modern industrial or some new administrative settlement. Such nucleated settlements pertaining to various periods or of the same age are what we may call double-town development. Thus where as Darbhanga-Laheriasarai, Bhavara-Kadhubani, Sitamarhi-Dumra, Patna city-Bankipur, Purnea city-Purnea court, Gayawale-Sahibganj etc. can be regarded as forming distinct old and modern sections in these urban centres, Dehri-Dalmianagar, Bhagalpur East-Sabour, Phulwaria-Barauni, Bankipur-Lithapur (in case of Patna) etc. are good examples of double-town phenomenon and are distinct morphological sections of towns of the same age. But due to the modern urban sprawl,

No. 21

the skyline of the sacred town of Bodh Gaya



No. 22

A general view of Rajendra Nagar - a modern
planned section of the city of Patna.

or due to explosive action of these nucleated core, ushered in by the coming of railways and subsequently accelerated by motor transport on the newly improved roads, the two (once so distinct) morphological zones appear to merge together and the distinction in course of time between the two sometimes becomes very ¹⁵ difficult.

Old Section - The old sections of the towns show a sharp distinction with respect to modern part. The streets in them are predominantly narrow, irregular in pattern and crooked. This is specially because of some political back-ground. In the early days or late medieval period, compactness of the settlement, narrower lanes and fortifications all round, were the most desired aspects of specially the important strongholds of the region, so ¹⁶ as to provide resistance in case of attacks.

In such old sections only the main streets may show stone or coarse sand pavement. These too are hardly 10 metres wide. They are often encroached upon by booths and the ¹⁷ projecting open fronts of the shops which line them. Too compact low and flat dwelling blocks with narrow alleys and blind lanes may lie in between the side streets. But the side streets themselves are so narrow and crooked that wheeled vehicles can pass through them only with great difficulty. In major towns and cities the residential blocks may attain huge structure,

15. Smailes, A.E. - 'Geography of towns' - (London 1962), page 112

16. Bogle, J.M. Linton - 'Town Planning in India, 1929

Mumford - 'Techniques and Civilization' 1934, page 123.

17. John D. Brush - 'The morphology of Indian Cities' India's Urban Future edited by Roy Turner, (Bombay, 1962) page 59.

being of several storeys, occurring along the two sides of the streets. The pukka buildings of bricks laid with mortar and often covered with plaster and roofed with semi-circular elongated tiles are, however, the common masonry construction. The mud walls and even thatch roof are also not quite uncommon. Immediately in front of the dwellings on both sides of the streets open 'nalis' (gutters carrying drainage or refuse water) run parallel to the street. The residential sections in general show very high density of population being sometimes as high as 74,240 persons per square mile as in the case of Sarayaganj, the old city chawk of Muzaffarpur city. Due to community consciousness, the residential blocks are very often sub-divided into recognised mohallas or wards. These are named very often after some predominant caste (Moghulpura, Azimabad city) or economic classes (Machuatoli, Darzitola, Patna - mohallas inhabited by fishermen and tailors respectively, Diwan mohalla Patna city, a ward peopled by clerks). In some cases the old section may contain a palace, the citadel or the fort of some local raja. In specially the late medieval or early British days these citadel sections were the nerve centres of all activities and were the main centres of attraction. But these sections in many of the towns today lie only in ruins or present some archaic conditions. The 'Kaiwan¹⁸ Shikoh' area of the Patna city that contained Sher Shah's citadel called 'Chehl Satun' and palatial quarters of high

18. This was the main centre of attraction even as late as Moghal period. The same place is now presenting an archaic mosaic of profused complexity and lies mostly in dilapidated condition to be corrupted and called 'Kauwa Khoh' today.

Mughal officials. Only the battlements and the moats of these walled or fortified sections are to be seen in some cases.

Heavily residential in character, the old city section¹⁹ nevertheless shares in limited space other uses too. In the first instance we find that the main streets in general and a few of the by-lanes also show a combination of both residential-cum-commercial houses. Here the part of the house facing the street serves as shops while the rest of the house is used for residential purpose or that immediately behind the shop as godowns or stores. It is common with every town here that well-defined and compact business core (the CBD - Central Business District of American cities) as a matter of fact is not quite distinct. Yet the converging point of several lanes or streets afford a good site for roadside business to be termed 'Chawk' of an Indian City'. Here local 'mandi' i.e. the principal grain or vegetable markets, some special markets where whole-selling in cloth and other items of business is carried on, some hotels, restaurants etc. All may appear jumbled in a linear way along the streets. In cases where the city possesses a chequered historical antecedents and shows elongated development for considerable distance as in Patna city or Gaya, several such business cores or local chawks may develop at the cross lanes, near special markets, along a temple or mosque etc. Hence besides the main city core occupying some significant location within the old town, secondary chawks or business nuclei also develop in a linear way in accordance

19. Gerald Breeze - 'Urban Development Problems in India'
AAAG. September, 1963 (Kansas 1963) page 261.

[illegible]

SOURCE :- THIS MAP IS PREPARED ON THE BASIS OF FIELD STUDIES; S.I. SHEETS 72^B/14 (FOR MOTIHARI), 72^D/13, 14, 14¹, 2 (FOR GAYA) & 72^G/2 (FOR PATNA) WERE ALSO CONSULTED.

with the routes converging on the main street of the town or the concentration of a particular community in certain quarters²⁰(Fig.58) But these checks in them usually do not show central location for the simple reason that the main street in most cases has no relation with the geometric centre of the town and may occur at any place and lead in any direction.²¹

Most old towns may even contain spotted industrial space where some local manufactures are carried on. It is not an uncommon scene therefore to find some houses with old chimneys where a little industrial activity is also carried on. Such randomly distributed manufacturing proves advantageous with respect to the reduction of time and cost of journey to work, an important factor for low-income labour working long hours. But this at the same time leaves no opportunity for its expansion. In case however where such industrial points in some old section, show expansion into contiguous areas they have often resulted in general disregard for the invaded areas creating both unattractive²² environs and inefficient factory layout.

The old sections in this way morphologically present congestion, poorer sanitation and defective drainage. Marked absence of green spots and open spaces are the other main features. The skyline is rather irregular and is punctuated by

20. Ali, S.K. - 'The towns of the Indian Desert' - Proceedings of the International Geography Seminar, Aligarh Muslim University, (Aligarh, 1959), page 299.

21. Ibid - page 299.

22. Breese, G. - AAAG, Sept. 1963
(Kansas, 1963), page 258.



No. 23
Main modern shopping centre
of the city of Darbhanga.



dome shaped mosques and dargahs and pinnacular temples. The nearer one may go to the commercial or palatial core, the narrower and irregular the streets become. The modern conveyances and the age-old bullock carts may go side by side. There may be some partial superimposition of modern aspects and marked economic stratification over the past culture, yet the morphological picture, on the whole of the entire old section of such towns is rather very complex.²³

Modern Section - Like the old city section, the modern urban settlement section also shows various functional components. But these are well marked here and occupy a definite shape and space. The modern bazars of the new section generally show broad streets with modern shopping centres in them. Some auxiliary chawks also develop at some notable road crossings or near the modern railway stations. Congestion and haphazard urban development can also be marked even in the modern sections. This is certainly the case with new bazars and the allied residential areas. Muradpur-Subzibagh-Bakarganj area of modern Patna can be regarded as an example. The interior areas and the lanes in these mohallas also show the same slum condition that characterises the old city section. Indeed the main street near Muradpur bazar and the Chandni Chawk near Patna Junction railway station area, only a few years back showed narrow bottlenecks and were studded with irregular development of shops and houses. These have now

23. Ahmad, Enayat - 'Bihar' (Ranchi 1965), page 268.

been re-oriented by the Improvement Trust or other planning organisation, yet much of the interior sections in these areas even to-date show quite unhygienic conditions and very crooked and narrow lanes or streets separate the residential-cum-commercial blocks in them. The density of population is generally very high, sometimes even greater than that of the old city section, because of the predominance of multi-storeyed houses in a limited space.

The administrative section or the civil line presents a morphological aspect of orderly streets, frequent green spots being relatively open and quiet. In some cases modern contrast is presented by cantonment area that lies close to some old municipal areas as in the case of Dinapur. But much of the vast open spaces of such military reservations or even the open areas of old civil lines since 1947 are now occupied by some administrative purposes on the one hand or for general public utility services such as schools, hospitals, etc. on the other.

The railway colony settlements like the cantonment and the administrative civil lines, again show greatest regularity of street plan (a perfect grid) and uniform and graded type of brick buildings. Railway towns in Bihar Plain can be regarded as models of modern town and the residential areas, administrative offices, bazars and recreationals in them all show perfect development because of their effective control and management by the railway authorities. Khagaul,

Jamalpur and Jhajha in South Bihar and Samastipur and Katihar in North Bihar are notable examples. In form they show oblong rectangular development parallel to the railway lines. The railway quarters are usually lined along the various streets that present rectilinear grid.

Along major access routes pertaining to some construction projects like the Ganga Bridge Construction at Mokamah, or the Oil Refinery Plant Construction at Barauni, several new nuclei or urban concentrations take place in the modern towns. These satellite townships (Bustees) occur specially along the fringe of the modern urban sprawl. The Kethidah colony to the south of the Rajendra Bridge at Mokamah and the Refinery Township near Begusarai are notable examples. They are usually well planned in their internal layout showing chequerboard or grid pattern and show uniformity of flat and well built pukka houses in them. The rapid urban sprawl of the modern sections sometimes leads to the formation of several 'village enclaves' in them. Such village enclaves in course of time become good market places for the surrounding modern urban dwellers and may provide a good nucleus²⁴ of miscellaneous service operations.

New industrial sections in certain towns give them what can be called 'Double town' form. Dehri-Balmianagar is a town of recent origin. Morphologically and functionally, it is²⁵ twin township consisting of (i) commercial-cum-residential core

24. AAAG, September, 1963 (Kansas, USA 1963) page 263

25. Singh, K.P. - Morphology of the Twin Township of Dehri-Balmianagar, M.G.J. 1957 (Varanasi 1957) page 176.

of Dehri traversed by the Grand Trunk road and (ii) the factory township of Dalmianagar lying a kilometre to the north and separated from the former by the Grand Chord line of the Eastern Railway.

In contrast to the old city section, the modern towns or the new sections of the towns present a relatively comfortable and inviting environment. The tree shaded streets here show grid or chequerboard with diagonal lines or radial with often cobweb plan in their layout. 'The rare tree in the old city', observes G. Breese, 'is mocked by the carefully tended - and irrigated, if necessary - greenery here'. The streets are broad, metalled or pitched. Structures are mostly western styled and show variety of designs. Except for the new chawks, they are placed at regular intervals and often contain compound walls and shady trees or some parks. Green spots, public maidan, athletic grounds, clubs, etc. are common features. The skyline is usually flat and even or pinnacled occasionally due to the clock towers in some new city chawks, water towers in railway zones or in residential sections, a few chimneys in modern industrial sections, and wireless posts in radio stations or other military sections.

Chapter Six

**Functional Classification
of
Towns**

CHAPTER SIX
FUNCTIONAL CLASSIFICATION OF TOWNS

Functional concept

The fundamental difference between a countryside i.e. a village and the urban landscape i.e. 'a town', besides the other relevant factors, lies also in the functions that they perform, as they constitute the area where the produce of the soil is collected. Towns are the places where people, largely unrelated to agriculture, live and work for the society. The urban activities are managed and arranged to a great extent by commercial, industrial and other groups of works and distinct functional zones, with respect to each of these can be discerned in a town. One of the most important functions of the modern towns, is also the well-developed means of transport and communication for much of its growth as well as the general prosperity of the region depends upon the function of the urban units. Towns at the same time are centres of culture and civilization. As centres of learning and cultural associations, these some-times attract population and perform distinct educational function; some urban units are important pilgrimage centres while others are purposely selected to perform administrative function.

Towns today, are, therefore, distinguished according to the primary functions which they perform. Their functional character very often is distinct and sharp specially when they are minor or smaller towns. But with the growth in size, the

the urban settlement becomes more complex and appears increasingly multifunctional and it is difficult to classify towns according to functions.

The problem of classification requires the placing of towns in different functional groups. A town may be uni-functional and so on. The degree of importance of the different major functions in a town has also to be assessed. This will help in finding the pattern of functional associations. It is essential in the first place, therefore, to ascertain what towns in the region concerned are really mono-functional towns, how many are two-functional and what towns perform three functions and so on. It is only then that some obvious 'functional combinations' may emerge. But the matter does not end here alone. The problem also involves the evaluation of the individual towns according to the degree of importance with respect to the function concerned. Thus besides the regrouping of the towns with respect to the selected activity groups, it is also necessary to bring about a relative importance between them.

Methodology applied by urban Geographers
for functional classification of towns -

The comparative study of towns is not a new idea. Even as early as 1841, J.G.Kohl¹ a German, attempted to throw some ~~some~~ light in this direction, while the works of F.Ratul & F. Von Richthofen gave some stimulus further to the ~~farther~~ study

1. Dickinson Robert E. - "The scope and status of urban Geography"- Readings in Urban Geography edited by Lyster & Kohn (Chicago 1959) page 19.

of cities. Hettner, however in 1895-1902 stressed the need for functional classification of towns. Several attempts have since been made from time to time for such classification of towns. It is not possible to give a detailed description as regards the approach and method of every writer in this connection, yet a brief idea of most of the pioneer workers is necessary. Some of the early 20th century thinkers were H. Aourousseau, W.² Christaller, Bobek, etc. Aourousseau in 1921 divided towns into six groups classed according to their dominant functions, which idea later on in 1932³ was elaborated by W. Christaller, a German scholar. But almost all of them had a subjective way of thinking⁴ not based on any statistical figure. Harris was probably the first to apply a quantitative method of functional analysis in the case of American cities in 1943. He assigned the towns of U.S.A. functional types on one quantitative criterion — the type of economic activity measured in terms of occupation and employment in which the residents were engaged. He employed different ratios for different types of functions, so that only those towns were considered as manufacturing which showed more than 60% of the employment in manufacturing, while towns with only 20% in wholesaling were classified as wholesale centres.

2. Aourousseau, H. - 'The distribution of Population - A construction Problem' G.R. 1921 (New York, USA-1921) page 563-92.

3. Dickinson - "The scope and status of urban Geography" - Readings in Urban Geography, edited by Mayer & Kohn (Chicago 1939), page 20.

4. Chauncey D. Harris - 'A functional classification of the cities in the United States' - Geographical Review (New York, USA 1943) Vol. 33, 1943, page 86-99

But the major towns or the cities which according to him may be placed under one category may not necessarily imply the absence of other functions. The difference according to Harris, therefore, between the 'types of cities based on functions are only
5
'relative rather than absolute'.

The new approach made in this connection by Harris gave a new impetus for more advanced thinking. Indeed a number of pioneer workers appear to have done considerable work in this connection. William Olsson (1943-Northern Sweden towns), Ogasawara (1950 - Japanese cities), Keuning (1950-Netherlands towns), Pownall (1953-New Zealand towns), Nelson (1955-American cities) and Hart (1955-Cities of American south) made independent efforts towards the classification of towns and almost in each case the classification was based on a uniform statistical source, usually the population census.

Ogasawara's discussion of Japanese cities is interesting for he adds interesting aspects to his discussion by
6
publishing frequency curves for his seven groups of industries.

7
Leight Pownall in 1953 tried to give a true and scientific approach in classifying towns with respect to functions. He applied a statistical procedure towards the functional classification.

5. Mayer & Kohn - Readings in Urban Geography (Chicago 1959)
page 128.

6. Alexandersson, Gunnar - 'Functional classification of cities in recent literature' - Industrial structure of American cities (Stockholm 1956), page 21-22.

7. Pownall, L.L. - 'Functions of New Zealand towns' A.A.A.G. 1953
Vol. 43, (Kansas, USA 1953), page 332-50.

cation of towns in New Zealand. According to Pownall's method, the means of various functions calculated for all the towns in the region and the towns having a positive deviation from the means can be grouped in each activity group. He is in this way a pioneer worker to suggest a point of reference which was lacking in Harris's method. Pownell's method can be decidedly regarded as more scientific than that of Harris because he believed in the uniform quantitateness as regards the towns. Moreover he does not confuse the functional structure of a small town with that of large metropolitan city whatever the degree of specialization of the small urban unit may be.

Prof. J. C. Weaver in 1954 in his study on the crop
8
combination regions in the middle west (U.S.A.) advanced another fruitful formula based on standard deviation ($\delta = \sqrt{\frac{\sum d^2}{N}}$) to determine combination groups. Nelson Howard, another eminent American geographer, making use of the standard deviation idea of Weaver thus made a healthy improvement on Pownall's method. He tried to overcome some of the complexities of Harris and made a separate attempt to classify the American cities in
9
1955. Like Pownell, he also believed that individual percentage figures were meaningless without some point of reference. Thus apart from the arithmetic mean or average value of percentage for each of the activity groups, he also calculated 'Standard

8. Weaver, J. L. - 'Crop Combination regions in the Middle West' - Geography, Vol. 44 (London 1954) - page 175-200

9. Nelson, Howard - 'A service classification of American Cities' Economic Geography, Vol. 31, July 1955 (Concord, N.H., U.S.A. 1955) page 189-210.

Deviation.' It is computed by adding up the squares of the 'Differences' of all values of the individual towns from the mean dividing that sum by the number of the towns and determining the square root of that quotient, which in terms of mathematical form can be stated thus :-

$$\text{Standard Deviation} = \sqrt{\frac{\sum d^2}{N}}$$

where \sum = sum; d = difference between each value & the mean.
N = Number of towns.

Nelson's standard deviation Method for the towns has now a wide acceptance all over the world for the towns of even a particular function can be re-arranged into three distinct groups according to the three degrees of variation from the mean. The three degrees of deviation are (i) mean + 1 SD (ii) mean + 2 SD and (iii) mean + 3 SD. Thus all towns in a particular activity group having a percentage value more than the mean (like Pownell) are grouped together. These are further re-arranged - those over + 1SD and are rated 1: if their percentages exceed the mean by 2SD then these are rated 2: if by 3SD or more, they are rated 3: but if the percentage exceeds the mean but is less than + 1SD, is put in the diversified category. Since each town having a positive deviation is included in the classification, the combinations are the same as of Pownell. But Nelson's allotment

10. Alexander, J.V. - Economic Geography (Wisconsin 1964) page 543

11. A city that exceeds the mean but is in no activity as much as a single deviation is put in the Diversified functional category.

of 1, 2 & 3 ratings to various activity groups according to their degree of variation from the mean (average) is certainly an improvement over that of Powmell, in the sense that it is more expressive and shows functional specialization of towns. Naturally the town with a higher S.D. value in a function will be more specialised in that function. Functional study of towns in Germany and Poland, has been carried on with profits and incomes etc. for the city as base, but these are not quite useful as the data considered are not easily available everywhere.

A recent attempt has been made in 1959 by Prof. John Webb. He has presented a method for classifying towns in terms of a 'functional index' and a 'specialization index', which can be applied in the analysis of small urban centres like that of Minnesota State of U.S.A.¹²

Amongst the Indian attempts towards classifying towns on the basis of functions, mention must be made of Prof. S. Muzaffar Ali who has thrown some light on this aspect¹³ while discussing the towns of the Indian desert and Prof. V. L. S. Prakasa¹⁴ who thinks that the Nelson's method is useful only in cases of small towns with more or less homogeneous population. Prof. Ali's early attempt at a time when the ideas of Powmell and Nelson were not well established, were based on quantitative

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12. Webb, J - 'Basic concepts in the analysis of small urban centres of Minnesota' Annals of the Association of American Geographers 1959 (Lawrence, Kansas 1959) page 55-72.
13. Ali, S. M. - Proceedings of the international geography seminar Aligarh Muslim University, (Aligarh 1959) page 281-299.^{al}
14. Prakasa, V. L. S. - 'Towns of Mysore State' Indian Statistical Institute Series, No. 22 (Calcutta 1964) pages 25-94

analysis and in the context of Indian Census categories where a number of activity groups were jumbled together, his percentage consideration in groups, gave some of the valuable results and made the functional structure of the Indian towns vivid and clear.

15

Mr. Rafiullah's new approach to functional classification is based on Weaver's idea. An important change that he has introduced is that the difference is calculated from the middle value of Weaver's theoretical standard. He has in this way been able to delineate precise combination groups and which is definitely an improvement over Weaver's idea.

Eminent geographers all over the world are evolving new statistical principles for classifying towns. People have very wisely become statistical instead of being subjective or quantitative, but even these statistics in India are most empirical in nature. Unless these statistics are re-oriented on the basis of urban economic base bringing out distinction between basic and non basic functions, classification based on them cannot bring fruitful results. Moreover in the growing scientific approaches, a time may come when census data may not even form the base for such classification.

Data and criteria adopted for
the present classification -

The criteria that are applied here for determining which towns of the Bihar Plain are industrial, commercial, etc, are Pownell's and Nelson's mean and standard deviation methods.

15. Rafiullah, S.H. - 'A new approach to functional classification of towns' - Geographer, Vol. 12
(Aligarh 1965) page 40-53.

The number of working population, of which figure is readily available in the Census report of 1961, has formed the base for the analysis of such methods. The proportion of this working population of a town engaged in performing a service is perhaps the best measures as Mr. Nelson puts it, 'of measuring the distribution of that activity'. It is one of the few measures that are easily comparable from activity to activity. Indeed the proportion of the Labour force actually employed in a service is of much more direct significance to the economy of the towns than the manufactured produces and their value or volume of sales of goods in a town.¹⁶ The primary urban unit generally consists of the following nine industrial categories (as given in the census records) :

- I. Cultivators;
- II. Agricultural labourer;
- III. Livestock, Forestry, Fishing, Mining, Plantation etc.
- IV. Household industry;
- V. Manufacturing other than household industry;
- VI. Construction;
- VII. Trade and Commerce;
- VIII. Transport and Communication ; and
- IX. Other services

Although the figures under 'Commerce and Trade' fail to distinguish retail and wholesale trade, these comprehensive

16. Nelson, H.J. - 'A service classification of American Cities'
E.G. Vol. 31, July, 55 (Concord, N.H. 1955)
page 189-210.

occupation figures, furnish good base to start with. These figures supplied by the Census authorities in 1951 were not so fruitful. For example the industrial activity group then under 'Occupation other than Cultivation' category was blurred by the inclusion of mining, quarrying, manufacturing, processing, stock-raising¹⁷ forestry and other forms of production under one head. This defect has however, been removed in 1961, the figures for all of them now appear in different heads. Now considering the broad categories of services performed by urban areas for society, however, regrouping of certain categories^{seem} essential. Agricultural workers, for example, under categories I & II need no separate consideration for these may simply reflect farm land and the rural influence of the town, which criterion has in 1961 been given due consideration while declaring a particular centre as urban unit. These are, therefore, considered together along with category III, so as to indicate 'primary service' performed by the labour force of the various towns. This will include 'Primary Towns' which possess an agricultural outlook and meet the primary needs of the people and are as a matter of fact still in the process of evolution. Similarly in a region like Bihar Plain where not much industrial activity is carried on and where only a little manufacturing is done side by side with the household industry etc., the Census activity groups such as house-hold industry (IV), manufacturing other than

17. Ali, S.M.- 'The functional classification of the towns of Indian desert'
Proceedings of International Geographical Seminar 1956 (Aligarh 1956) page 295.

household industry (V) and Construction (VI) are all condensed into one major group to bring about a consolidated industrial structure. The other groups, however, remain as they are to show the commercial (Business mart and market towns), transport (railway and bus centres) and other functional characteristics of towns.

The percentages of the workers under each selected activity group with respect to the total workers for each of the 90 towns were calculated. Figures for the cities, major towns and some of the other medium and minor towns are indicated in Tables I & II below :-

TABLE I

Proportion of workers in selected activities in Five cities of Bihar Plain (1961)

		Primary activities	Manufacturing	Commerce	Transport	Other Services
Patna	No. of workers	9,993	25,954	17,199	10,984	53,409
	%	8.50	22.08	14.63	9.35	45.44
Gaya	No.	3,368	13,913	7,473	5,943	16,881
	%	7.07	22.24	15.71	12.49	35.48
Bhagalpur	No.	1,927	16,452	6,570	3,602	14,591
	%	4.47	38.13	15.23	8.35	33.82
Muzaffar- pur	No.	1,498	7,272	6,755	3,506	14,997
	%	4.40	21.37	19.85	10.31	44.07
Darbhanga	No.	2,461	9,008	5,152	2,470	12,017
	%	7.91	28.96	16.56	7.94	38.63

* Percentage figures are those of the workers in an occupation to the total working population of the particular town.

TABLE II

Proportion of workers in selected activities (Sample towns of different urban categories other than the cities).
1961

Major Towns	Primary Activities	Manufacturing	Commerce	Transport	Other Services
<u>MAJOR TOWNS</u>					
1. Bihar	No. 5,049 % 20.91	8,912 36.91	3,660 15.16	855 3.54	5,671 23.48
2. Arrah	No. 2,968 % 13.63	4,770 21.91	3,529 16.21	1,828 8.40	8,677 39.85
3. Katihar	No. 1,479 % 7.21	5,844 28.47	3,308 16.12	5,437 26.49	4,456 21.71
<u>MEDIUM TOWNS</u>					
4. Khagaul	No. 172 % 3.00	745 12.99	440 7.68	3,136 54.69	1,241 21.64
5. Bettiah	No. 1,466 % 11.61	3,724 29.23	2,634 20.67	736 5.78	4,180 32.81
6. Jhajha	No. 214 % 4.58	1,629 34.89	511 10.95	1,426 30.54	889 19.04
<u>MINOR TOWNS</u>					
7. Murliganj	No. 1,959 % 47.66	638 15.52	541 13.16	131 3.19	841 20.46
8. Raxaul	No. 716 % 20.06	709 19.86	809 22.67	370 10.37	965 27.04
9. Bodh Gaya	No. 1,581 % 62.12	303 11.91	166 6.52	92 3.61	403 15.84

The table below indicates the average or mean percentage of the workers engaged in the various activity groups for the total of 90 towns of the region in 1961. This arithmetic average for each activity groups, has been computed so as to act

as points of reference.

TABLE III

Average(mean) percentage of workers in selected
activity groups 1961

	Primary Activities	Manufac- turing	Commerce	Transport	Other Services	
Cities (Class I Pop. over 1,00,000)	6.48	27.96	16.38	9.70	39.48	Average for 5 cities
Major towns (Class II- 50,000- 99,999)	14.93	31.43	14.04	9.60	30.00	Average for 7 Major towns
Medium Towns (Class III & IV- 10,000 - 49,999)	23.49	25.30	16.04	8.06	27.11	Average for 55 Medium towns
Minor towns (Class V & VI below 10,000)	26.41	24.05	15.26	5.97	28.31	Average for 23 minor towns
AVERAGE	22.63	25.60	15.70	7.74	28.33	Average for 90 urban centres

The 'Standard Deviation' (SD) from the mean,
calculated for each of the five activity groups, is shown

in table IV below.

TABLE IV

Average Standard Deviation (S.D.) for selected activity groups in the towns of Bihar Plain - 1961

	Primary Activities	Manufac- turing	Commerce	Transport	Other Services
Mean	22.63	25.60	15.70	7.74	28.33
S.D.	14.10	7.66	4.95	7.67	8.22
Mean 1SD	36.73	33.26	20.65	15.41	36.55
Mean 2SD	50.83	40.12	25.60	23.08	44.77
Mean 3SD	64.93	48.58	30.55	30.75	52.99

Towns classified according to Nelson's Degree of specialization Group :-

Three degrees of variation from the mean were recognised and the towns were grouped in their appropriate categories. Towns that were over 1 SD from the mean in Primary activity group were given Primary 1 rating (P) over 2 SD P2 rating and over 3 SD or more P3 rating. A similar procedure was followed for each activity group. Towns which were not even + 1 SD in any activity have been classed as diversified towns. The cities and towns of Bihar Plain specializing in the various functions under this schemes thus stand as stated below :-

[P Primary; M Manufacturing ; C Commercial ;
T Transport; S Miscellaneous Service]

CITIES (Pop.1,00,000 & above)

1. Patna - S2
2. Gaya - Diversified
3. Bhagalpur - M
4. Muzaffarpur - S
5. Darbhanga - S

MAJOR TOWNS (Pop. 50,000-99,999)

6. Monghyr	- M
7. Bihar	- M
8. Arrah	- S
9. Chapra	- Diversified
10. Katihar	- T ₂
11. Jamalpur	- M ₃
12. Dinapur	- Diversified

MEDIUM-SIZED TOWNS
(Pop. 10,000 - 49,999)

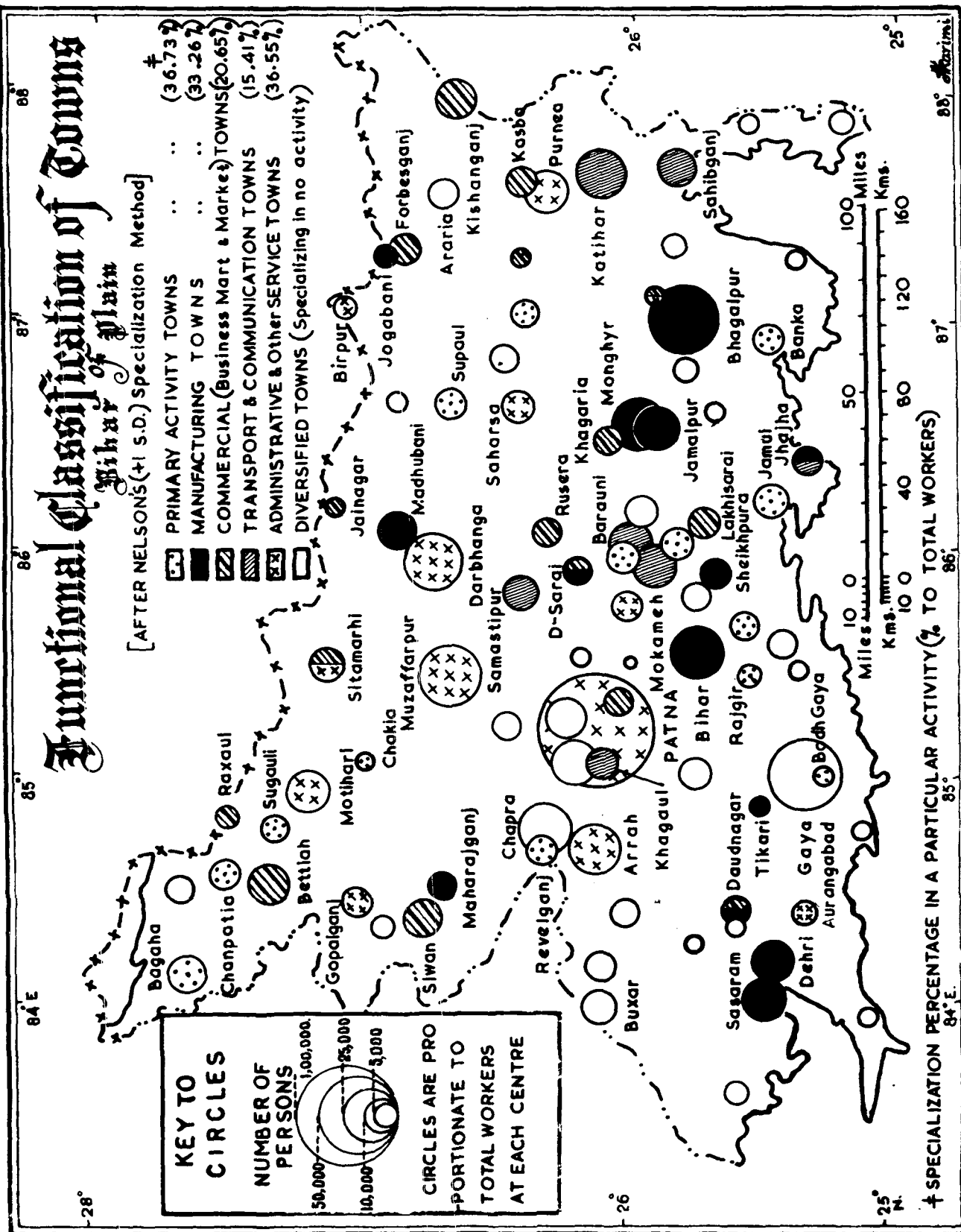
13. Barauni	- T ₂
14. Purnea	- S
15. Bettiah	- C
16. Dehri	- M ₃
17. Sasaram	- M
18. Mokameh	- T
19. Hajipur	- Diversified
20. Motihari	- S
21. Sahibganj	- T ₂
22. Madhubani	- M ₂
23. Siwan	- C
24. Begusarai	- Diversified
25. Kishanganj	- C
26. Samastipur	- T ₂
27. Jamui	- P
28. Toghra	- P
29. Jehanabad	- Diversified
30. Buxar	- Diversified
31. Sitamarhi	- C ; S
32. Khagaul	- T ₃
33. Barahiya	- P
34. Dumraon	- Diversified
35. Bagaha	- P ₂
36. Barh	- S
37. Lekhisarai	- C
38. Nawada	- Diversified
39. Supaul	- P
40. Sheikhpura	- M
41. Forbesganj	- C
42. Saharsa	- S
43. Champotia	- P
44. Aurangabad	- S
45. Jhajha	- M ; T ₂
46. Gopalganj	- S
47. Lalganj	- Diversified
48. Araria	- Diversified
49. Khagaria	- C ₂
50. Barbigha	- Diversified

51. Daudnagar	- M ; C
52. Ruzera	- C
53. Warisaliganj	- P
54. Kasba	- C
55. Revelganj	- P
56. Dalsinghsarai	- M ; C
57. Banka	- P
58. Jagdishpur	- Diversified
59. Madhepura	- Diversified
60. Fatwa	- C
61. Sultanganj	- Diversified
62. Pakaur	- Diversified
63. Shikarpur	- Diversified
64. Maharajganj	- M
65. Sugauli	- P
66. Mahuar	- Diversified
67. Hissua	- Diversified

MINOR TOWNS (Pop. less than 10,000)

68. Bhabhua	- Diversified
69. Colgong	- Diversified
70. Luriganj	- P
71. Kharagpur	- Diversified
72. Ramaul	- C
73. Hussainabad	- Diversified
74. Mirganj	- Diversified
75. Rajgir	- P
76. Shergahati	- Diversified
77. Kasriganj	- Diversified
78. Jogabani	- M
79. Haugachia	- C ; S
80. Birpur	- S
81. Jainagar	- C ₂
82. Godda	- Diversified
83. Tikari	- M
84. Benmanchi	- C
85. Rajmahal	- Diversified
86. Bodh Gaya	- P ₂
87. Chapra	- P
88. Bikanaganj	- Diversified
89. Nirmali	- Diversified
90. Bakhtiarpur	- Diversified

FIG. NO. 59



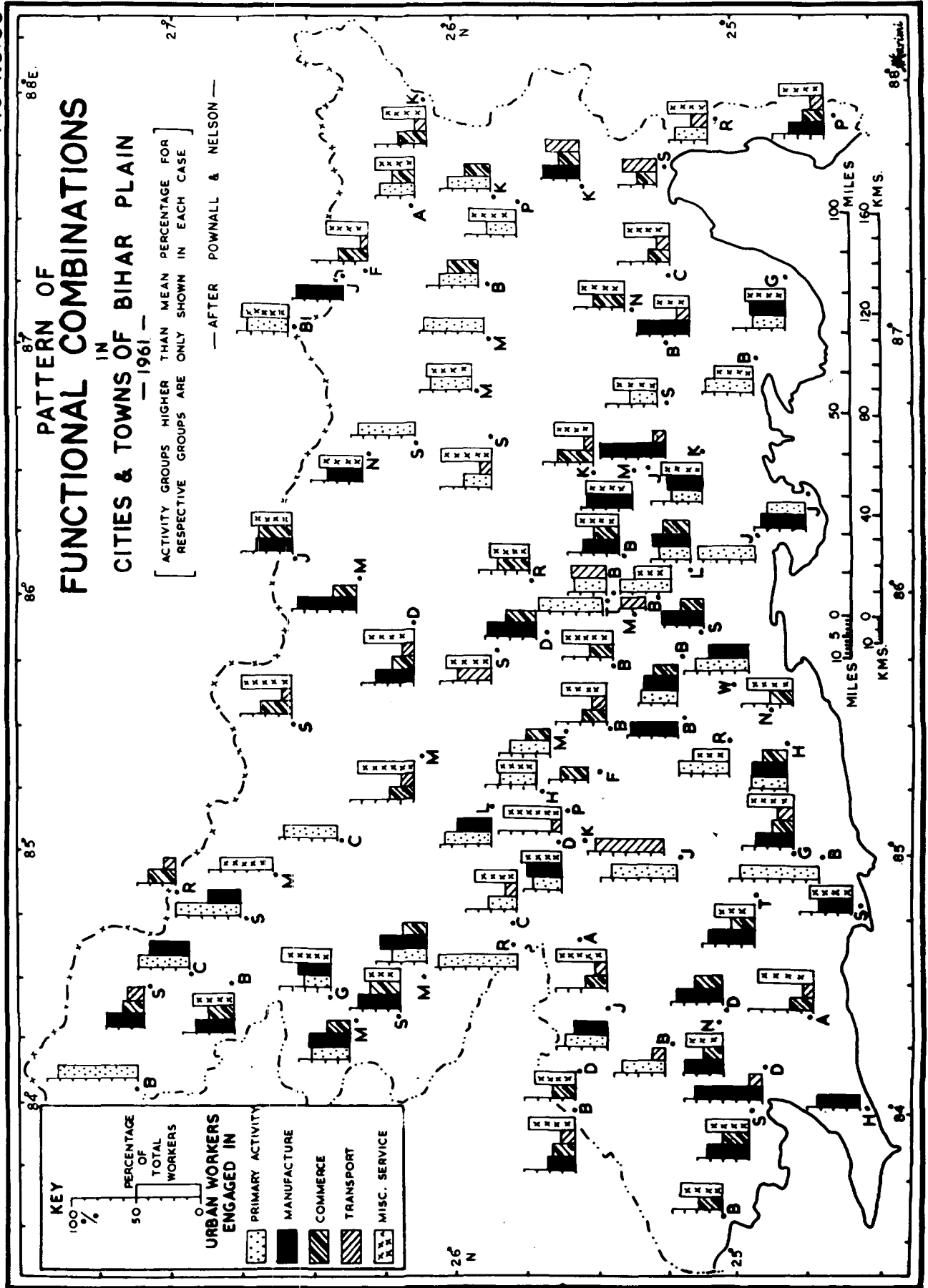
The urban centres in Bihar Plain as analyzed with respect to their functions on the basis of Nelson's standard deviation method show specialisation only in 59 cases where 14 are primary activity towns, 14 are manufacturing towns, 16 towns specialise in trade and commerce, 7 are transport towns and 13 towns are designated service centres, while the rest of 31 towns falling short of the +1SD specialization group are only 'diversified' in their functional character (Fig.59). But even in the specialised functional towns, the highly specialized centres are not many. Most of the towns in the various activity groups belong only to the lowest (+1SD) degree of Nelson's functional specialization. Out of a total of 90 urban centres only three units namely Dehri, Jamalpur & Khagaul show a high (+ 3SD) degree of specialization; the former two belong to manufacturing activity group where in each case more than 50% of the working population is engaged in manufacturing while Khagaul is a highly specialized transport town, where no less than 54.7% of the total workers are engaged in railways. 12 towns, however, are of + 2SD group and of these, one town (Patna) is an administrative service centre, 5 towns (Katihar, Barauni, Sahibganj, Sitamarhi and Jhajha) are transport towns, one town (Madhubani) is manufacturing centre, 2 towns (Khagaria and Jainagar) are commercial, while 3 towns (Bagaha, Revolganj and Bodh Gaya) belong to the primary activity group. Apart from these 13 towns showing specialization of high order, 42 towns belong only to Nelson's lowest (+ 1SD) group of specialization,

Of these 11 are manufacturing towns, 14 are market towns or business and trade centres, 1 is a railway centre and 12 are administrative towns such as district or sub-divisional headquarters or are educational, religious etc. centres.

Pattern of Functional Association -

Nelson's functional specialization analysis reveals that the towns in general are mono-functional in character. Even the cities like Patna, Bhagalpur, Muzaffarpur and Darbhanga and most of the major towns show specialization only in one function. Only 5 towns namely Sitamarhi (commercial-cum-Service-"CS") Jhajha (Transport-cum-Manufacturing-"TM"), Daudnagar (manufacturing-cum-commercial -"MC"), Dalsinghsarai (manufacturing-cum-commercial-"MC") and Naugachia (Commercial-cum-Service) show double functional specialization combinations in them. But this does not, however, mean that other functions are all lacking in these specialised towns. Nelson's method is applied here to bring about a clear picture regarding the specialization of the towns in a particular activity group. Let us take the case of Katihar town in Purnea district of North Bihar. Katihar shows high degree of specialization with respect to transport and according to Nelson it attains $T_2 (+ 2SD)$ position in that function. But although the percentage figures for its manufacturing and commercial workers are not sufficiently high to qualify for Nelson's grouping, the two functions are not quite insignificant either. The percentages in these two functions are well above the mean. Katihar in

FIG. NO.60

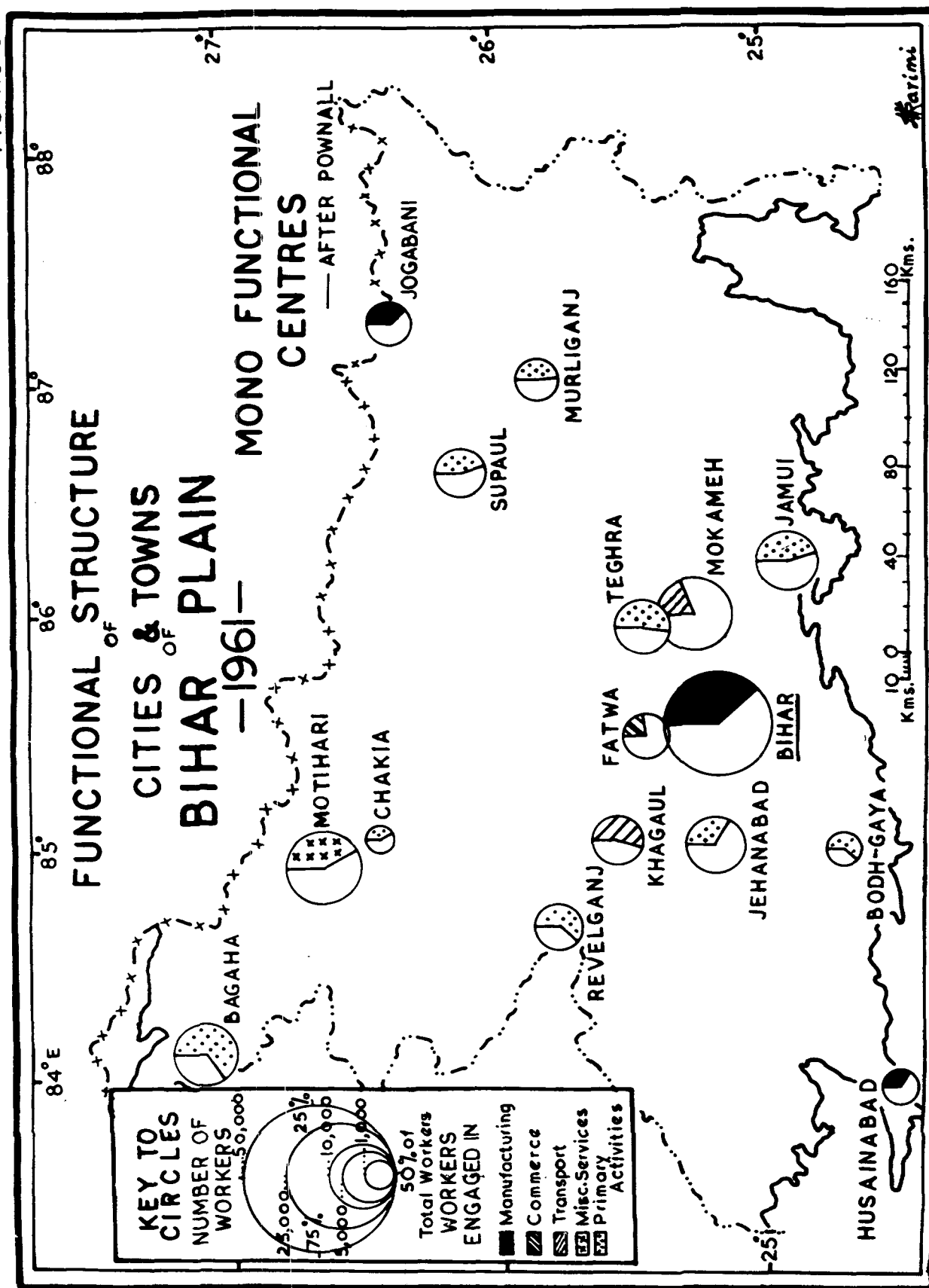


this way according to Pownall - is three functional (transport-cum-manufacturing-cum-commercial - "TMC") town where transport is obviously significant. Similarly the city of Gaya according to Nelson's is not able to qualify for any of its functions for even the lowest (+ 1SD) degree of specialization and is thus like all such towns is designated 'diversified towns'. But the same town as analyzed in the light of Pownall's method is a multifunctional (4 function-combination-manufacturing-cum-Commercial-cum-transport-cum-Service - "MCTS") town but where no function is significant by itself.

Based primarily on Pownall's consideration of all towns having a positive deviation from the mean (a point of reference), 16 towns within the region are mono-functional, 38 are two functional and 32 towns are of three-functional character while 4 towns show four-function combinations. The functional associations of these towns are well-illustrated in Fig.60 where the percentages of various activity workers to total workers at each centre are indicated. Here activity groups higher than mean percentage for respective groups are only shown in each case.

Mono-functional towns - The map (Fig.61) and the chart below clearly reveal that the mono-functional character is found in 16 towns and this is common mainly in medium-sized or minor towns and as such is mainly influenced by primary activities where 9 out of 16 non-functional towns show engagement in primary activities alone.

FIG. NO. 61



SOURCE OF DATA:—CENSUS OF INDIA REPORT 1961, VOL 4, PART II A (PATNA, 1963)

MONOFUNCTIONAL TOWNS

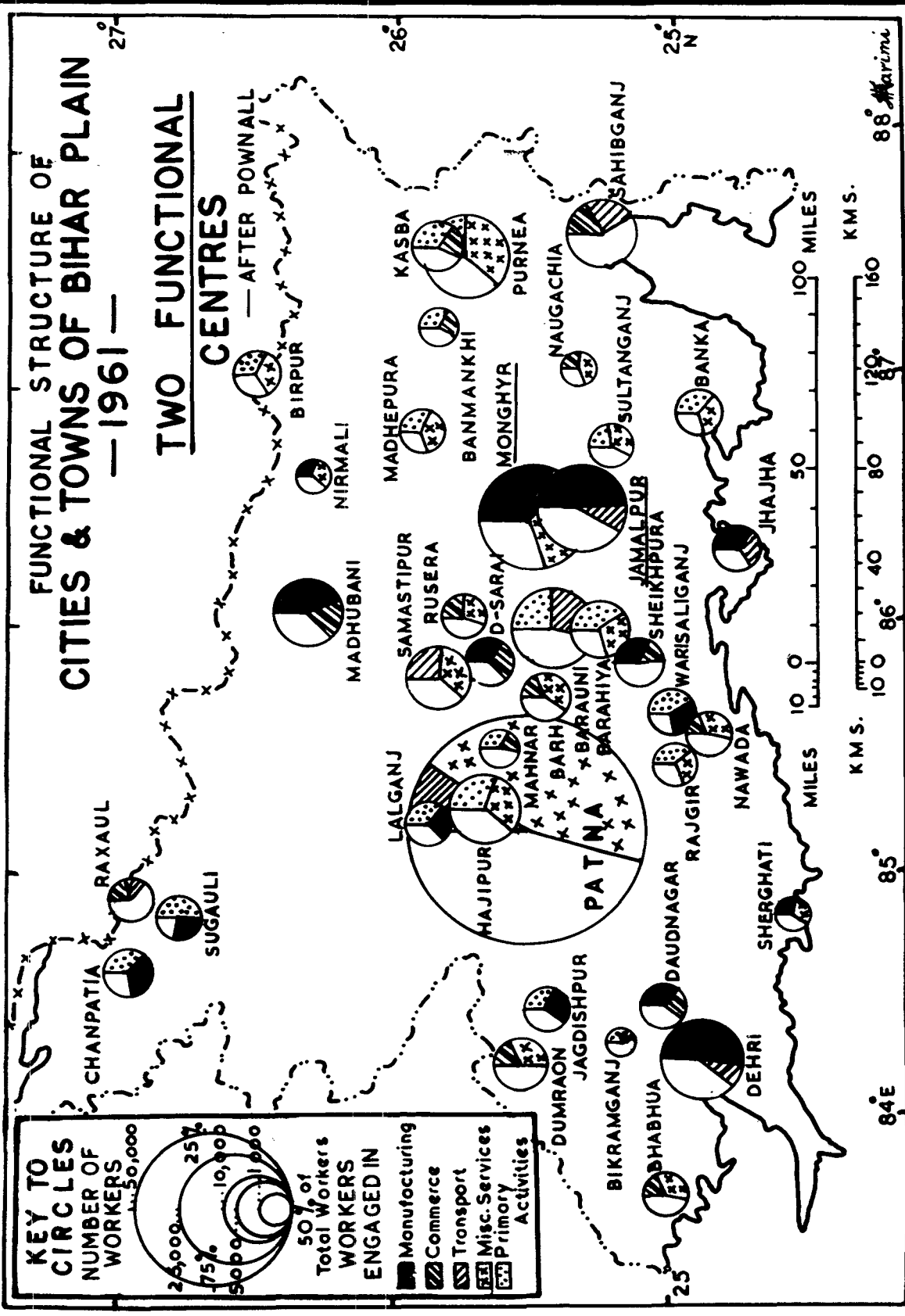
	City	Major towns	Medium towns	Minor towns	Total
P - Primary activities	-	-	Jamui; Supaul Teghra; Bagaha Jehanabad; Revelganj	Murliganj Bodh-Gaya Chakia	9
M - Manufacturing	-	Bihar	-	Jogabani Hussainabad	3
C - Commercial	-	-	Fatwa	-	1
T - Transport	-	-	Khagaul Mokameh	-	2
S - Service	-	-	Motihari	-	1
TOTAL					16

The only exception is that of Biharsharif which is a major town and is a mono-functional town of manufacturing activities. Mokameh and Khagaul are typical transport towns while Fatwa and Motihari show mono-functional character in commercial and service activities respectively.

Two-functional towns - 38 towns mostly occupied by medium and minor sizes are two functional centres (Fig.62). Of these one, namely Patna is a city and two namely Monghyr and Jamalpur, are major towns. The pattern evident in these towns is that most of them are service or primary activity towns in the main and these functions in them occur either in association with each other or the same function occurs in association with

FUNCTIONAL STRUCTURE OF CITIES & TOWNS OF BIHAR PLAIN —1961—

TWO FUNCTIONAL CENTRES — AFTER POWNALL



SOURCE : OF DATA :- CENSUS OF INDIA REPORT 1961, VOL 4, PART II A (PATNA 1963) FIG. NO. 62

manufacturing or commercial activity -

TWO FUNCTIONAL TOWNS

Combi- nation	City	Major towns	Medium towns	Minor towns	Total
PH	-	-	Chanpatia; Lalganj Warisaliganj; Jagdishpur; Sugauli	-	5
PC	-	-	Mahnar; Kasba	Banmankhi	3
PT	-	-	Barauni	Dikramganj	2
PS	-	-	Purnea; Hajipur Banka; Ladhepura; Sultanganj; Barahiya	Rajgir Birpur	8
LS	-	Monghyr	-	Sherghati Nirmali	3
TS	Patna	-	Samastipur	-	2
CS	-	-	Dumraon; Barh; Navada; Rusera; Bhabhua	Naugachia	6
CT	-	-	Sahibganj	Raxaul	2
CH	-	-	Madhubani; Sheikhpura; Daudnagar; Dalsinghsarai	-	4
TE	-	Jamalpur	Dehri; Jhajha	-	3
TOTAL	1	2	27	8 =	38

The city of Patna on account of its various administrative and state transport activities, is a service-cum-transport town. The two major towns of Jamalpur and Monghyr show manufacturing in the main with transport in the former and service (administration) in

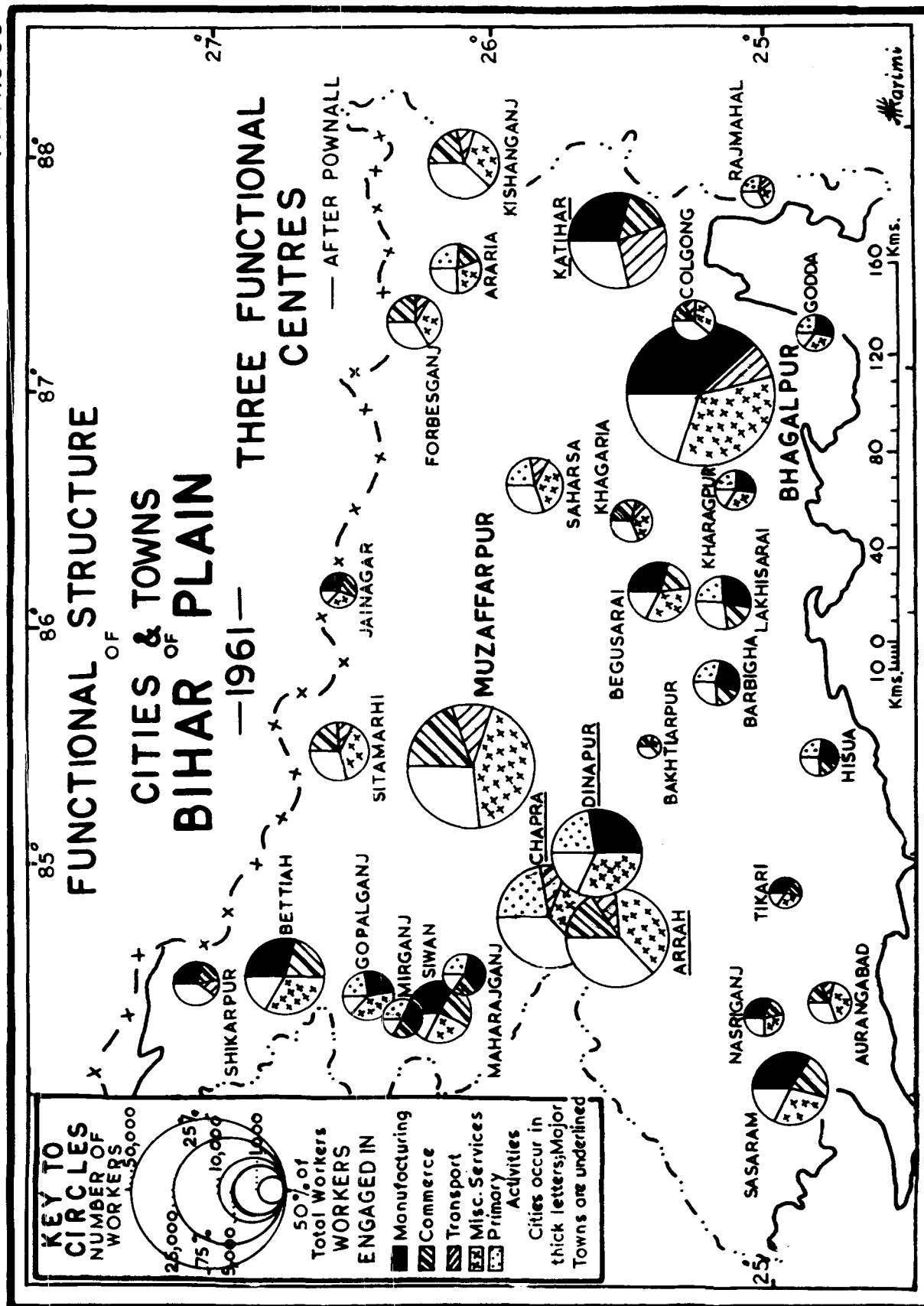
the latter case as the other associated functions to make them two functional in character. Sahibganj in the eastern part of the Ganga riparian tract being facilitated due to the river and railway communications dealing in the local produce of Sabai grass and stones and Raxaul along Nepal border having good rail-cum-road facilities dealing in the local produce of grains of North Bihar and timber of Nepal, are good examples of commercial-cum-transport combinational towns. Jamalpur, Dehri and Jhajha are notable examples of manufacturing-cum-transport towns while Madhubani, Sheikhpura, Daudnagar and Dalsinghsarai are towns of manufacturing-cum-commercial structure.

Three-functional towns - A sufficiently high number of towns (32 in number) show three-function-combinations - Two cities, Bhagalpur & Muzaffarpur; 4 of the major towns namely Katihar,

THREE FUNCTIONAL TOWNS

Combina- tions	City	Major Towns	Medium towns	Minor towns	Total
MCS	-	-	Bettiah; Sasaram; Nasriganj; Sivan; Begusarai	Jainagar; Tikari	7
MCP	-	-	Iekhisarai; Hisua Barbiga; Maharajganj	Mirganj	5
MCT	-	Katihar	Shikarpur	-	2
CTS	Muzaffar- pur	Arrah	Kishanganj; Khagaria; Sitamarhi; Forbesganj Aurangabad	Colgong Bakhtiarapur	9
PSM	-	Dinapur	Gopalganj	Godda; Kharagpur	4
PST	-	Chapra	--	Saharsa Rajmahal	3
PSC	-	-	Araria	-	1
MTS	Bhagalpur	-	-	-	1
TOTAL	2	4	16	10	32

FIG. NO. 63



SOURCE OF DATA : "CENSUS OF INDIA REPORT 1961, VOL. 4, PART II A (PATNA 1963)

Dinapur, Arrah and Chapra; the towns of Sugar mill zone of western Saran and Champaran districts; towns of Son re-entrant and the zone of contact towns along the Nepal border come under this category.

The main combination in this category is of towns engaged in manufacturing-cum-commercial activities and these are associated either with service, primary activities or with transport (Fig.63). The CT (Commercial-cum-Transport) combination is also important which is associated either with miscellaneous service or with manufacturing. Arrah, a major town is of the former category and is a commercial-cum-transport-cum-service town while Katihar belongs to the latter group. 8 towns including Dinapur and Chapra show primary-service association and occur in association with manufacturing, transport, or commercial activity groups. Bhagalpur which comes under this group is, however, a city of manufacturing-cum-transport-cum-service functional association.

Four-Functional towns - Only 4 centres in Bihar Plain out of the total of 90, show four functional combination (and all of them are manufacturing-cum-commercial-cum-transport-cum-service centres. (Fig.64) Unlike the mono or bi-functional towns where primary activities were of the main, these centres are devoid of the predominance of this activity group in them. The other notable peculiarity of these centres is that two of them namely

FOUR FUNCTIONAL COMBINATION CENTRES

<u>Combination</u>	<u>City</u>	<u>Major towns</u>	<u>Medium towns</u>	<u>Minor towns</u>	<u>Total</u>
MCTS	Gaya Darbhanga	-	Buxar	Rajmahal	4
TOTAL	2	-	1	1	4

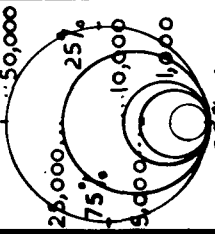
FUNCTIONAL STRUCTURE OF CITIES & TOWNS OF BIHAR PLAIN

—1961—

FOUR FUNCTIONAL CENTRES

— AFTER POWNALL —

KEY TO
CIRCLES
NUMBER OF
WORKERS



Total Workers
WORKERS
ENGAGED IN

- Manufacturing
- ▨ Commerce
- ▧ Transport
- ▩ Misc. Services



DARBHANGA



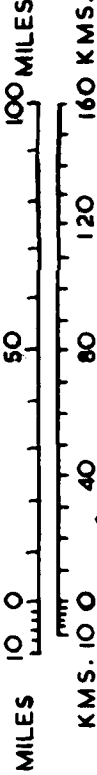
GAYA



BUXAR



PKAUR



88° 45' E

SOURCE OF DATA :— CENSUS OF INDIA REPORT 1961, VOL 4, PART IIA (PATNA 1963)

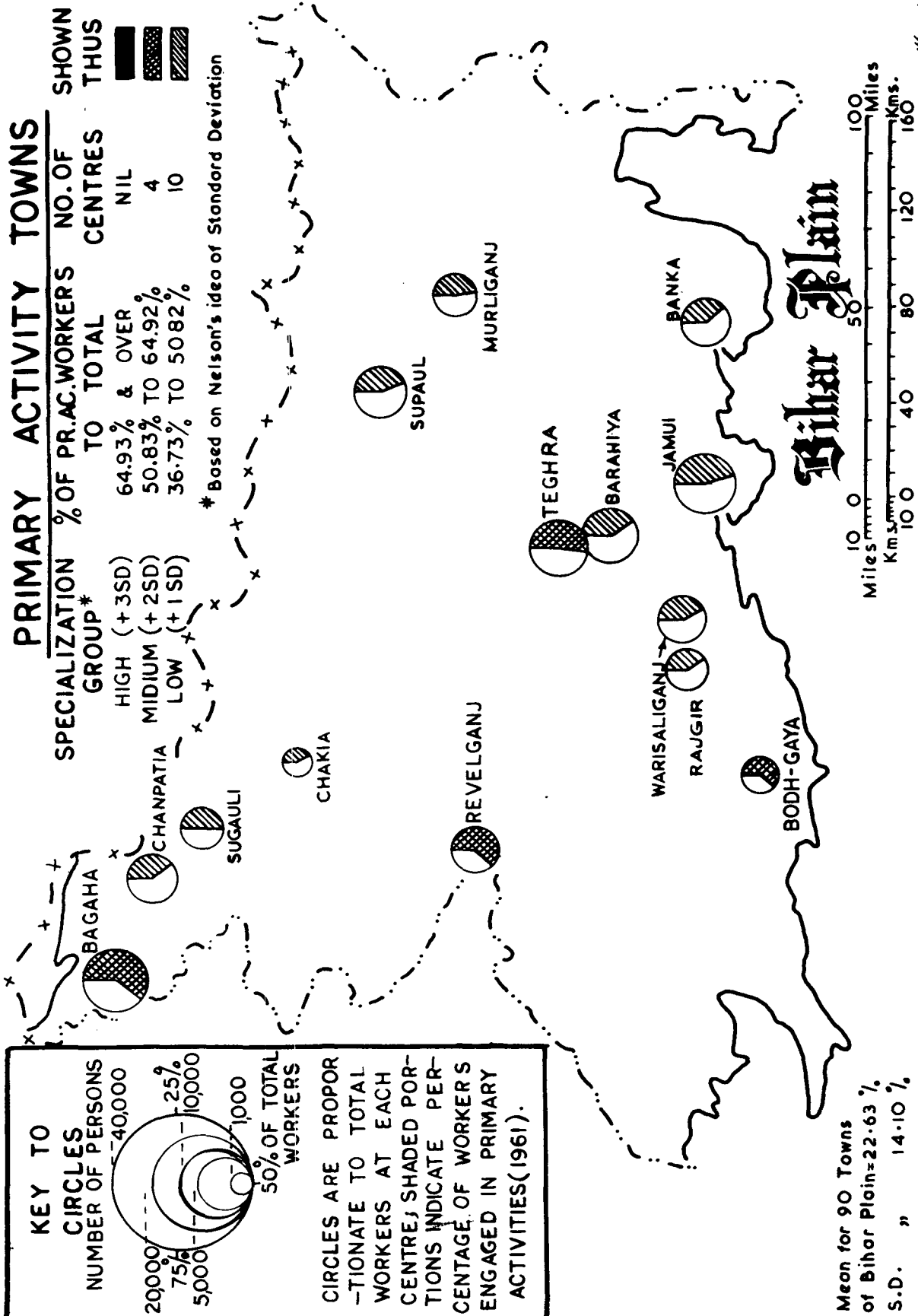
FIG. NO.64

Buxar and Rajmahal are located in the extreme east and west along Uttar Pradesh and West Bengal borders respectively and both of them are medium or minor towns while the rest of the two centres are cities namely Gaya and Darbhanga and are regional representatives of the North Bihar and South Bihar interior plains. The multi-functional character in these centres is due to their border location signifying strategy with respect to administrative and commercial activities with the two states in case of Buxar and Rajmahal and the central regional location in the interior plains in case of Gaya and Darbhanga signifying collecting control facilities and varied activities in them.

Primary Activity Towns -

By 'Primary Activity Centre' is meant a town that is engaged primarily in the output of primary productions, such as grains etc. or the essential raw materials required by other activity groups within the town itself or by other urban centres. It is a fact that the towns depend for their life upon the produce of the farmers, miners, foresters etc. and even these, produced either by a section of workers within the urban unit or brought from outside, cannot be consumed unless these are properly processed; so that there is a need of a series of allied workers called 'Primary Activity Workers'. At the same time a chain is welded together whereby primary production, transportation, manufacturing etc. are all inter-related. Indeed the foundation of the whole urban complex is based primarily

FIG. NO.65



on this function. But unless the primary production is mechanized the centres of such activity groups will appear no less than rural units or over-grown villages. Hence there seems a deep correlation between the mechanization of primary production and urbanization — the greater the agriculture, mining, forestry etc. of a region is mechanized the greater is its tendency to urbanize. Mechanization of primary production changes the very outlook of the urban unit and attracts labourers for city jobs, so that the urban unit gradually grows in size.

Unfortunately the primary activity in Bihar Plain as of India in general is still in its indigeneous form, most of the centres specializing in this function look agricultural or are just over-grown villages; the term 'agricultural towns' for such functional centres is in this way not quite inappropriate.

Unlike the other activity groups, primary activity function is more marked in medium and minor towns (Fig.65) located mainly in the interior plains and in them it constitutes on an average one fourth of the urban workers, but this is as low as only 6.48% in the case of cities. 40 towns in Bihar Plain are above the average percentage of 22.63% (Fig.66) and of these 10 towns are of low specialization while 4 towns namely Revelganj, Bodh Gaya, Bagaha, and Teghra where more than half to 3/5th of the total workers are engaged in primary activity function are centres of medium specialization.

Bihar Plain

SHOWING

DISTRIBUTION OF URBAN WORKERS

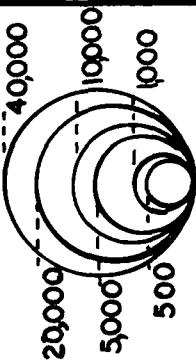
Engaged in
PRIMARY ACTIVITIES

- 1961 -

KEY TO

SPHERES

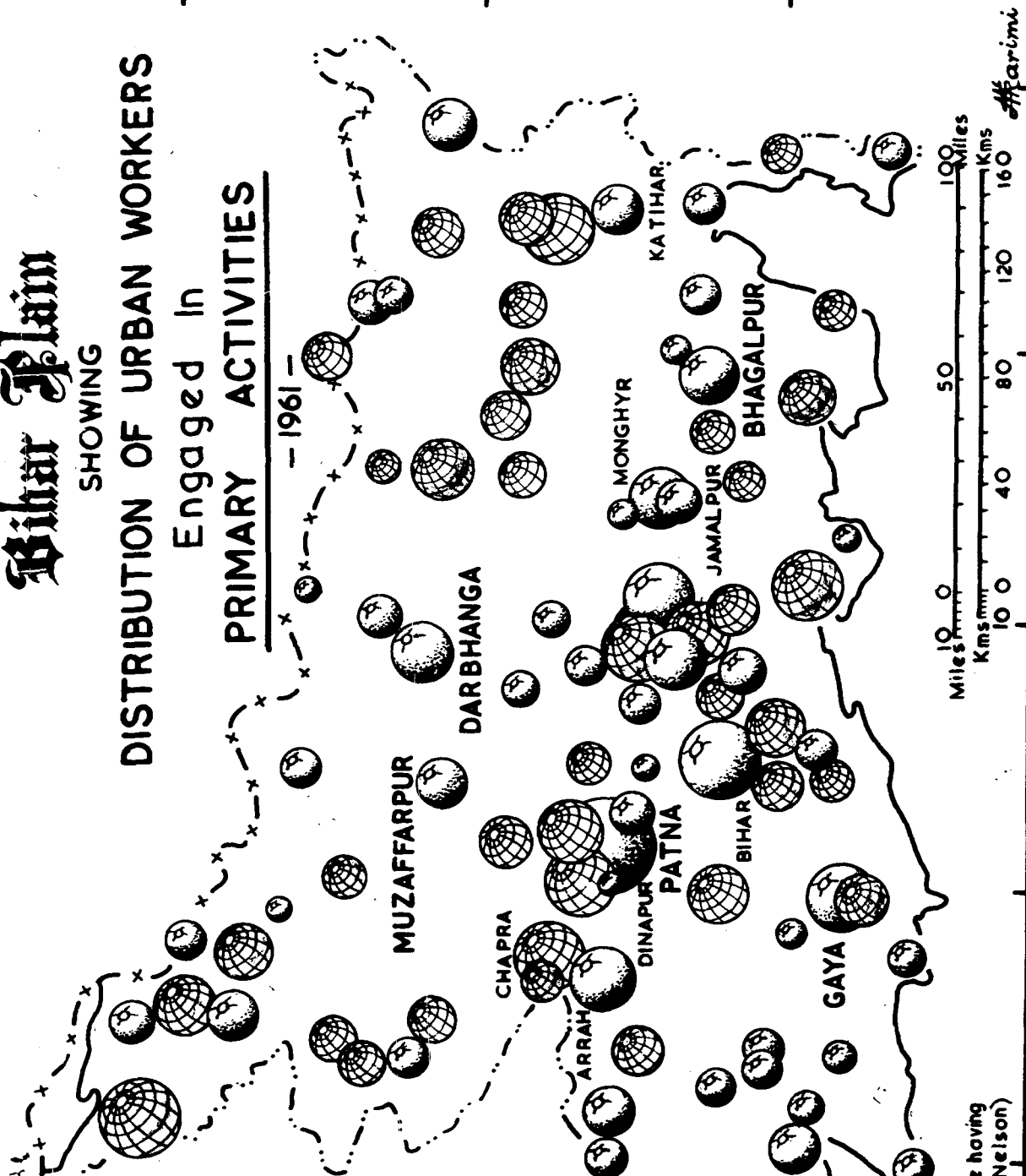
NUMBER OF PERSONS



SPHERES ARE PROPORTIONATE TO THE NUMBER OF WORKERS AT EACH CENTRE ENGAGED IN PRIMARY ACTIVITIES; CENTRES SPECIALISING* ARE TINTED; CENTRES WITH PERCENTAGES BELOW MEAN (22.63% TO TOTAL WORKERS ENGAGED IN PRIMARY ACTIVITIES) ARE SHOWN AS SHADED SPHERES; NAMES OF ONLY CITIES & MAJOR TOWNS ARE INDICATED.

Mean for 90 Towns of Bihar Plain 22.63%
S.D " 14.10%

* Specialized Centres are those having 36.73% and above (after Nelson)



PRIMARY ACTIVITY TOWNS

Specialization Group Urban Centres Workers engaged in % to total
primary activities workers

Highly Specialized Centres (+ 3SD).. 64.93% and over

Nil

Centres of medium specialization (+ 2SD).. 50.83 % to 64.92%

1.Revelganj	2,968	62.38%
2.Bodh Gaya	1,581	62.12%
3.Bagaha	5,300	61.17%
4.Teghra	3,478	52.08%

Centres of low specialization (+1SD..36.73% to 50.82%)

5.Sugauli	2,049	50.66%
6.Murliganj	1,959	47.66%
7.Jamui	3,780	45.19%
8.Supaul	2,549	44.41%
9.Chakia	795	42.33%
10.Varisaliganj	1,978	42.26%
11.Barahiya	2,727	40.74%
12.Rajgir	1,371	40.30%
13.Chanpatia	2,123	39.77%
14.Banka	1,860	38.49%

Centres not specializing but whose percentages are above the mean
(22.63%)

Lalganj; Kasba; Jagdishpur; Banmankhi;
Jehanabad; Madhepura; Lahar; Birpur;
Hajipur; Barbiga; Maharajganj; Hisua
Mirganj; Nirmali; Araria; Godda;
Rajmahal; Barauni; Purnea; Lekhisarai;
Dinapur; Chapra; Saharsa; Gaopalganj;
Sultanganj and Kharagpur = 26 Grand Total=40

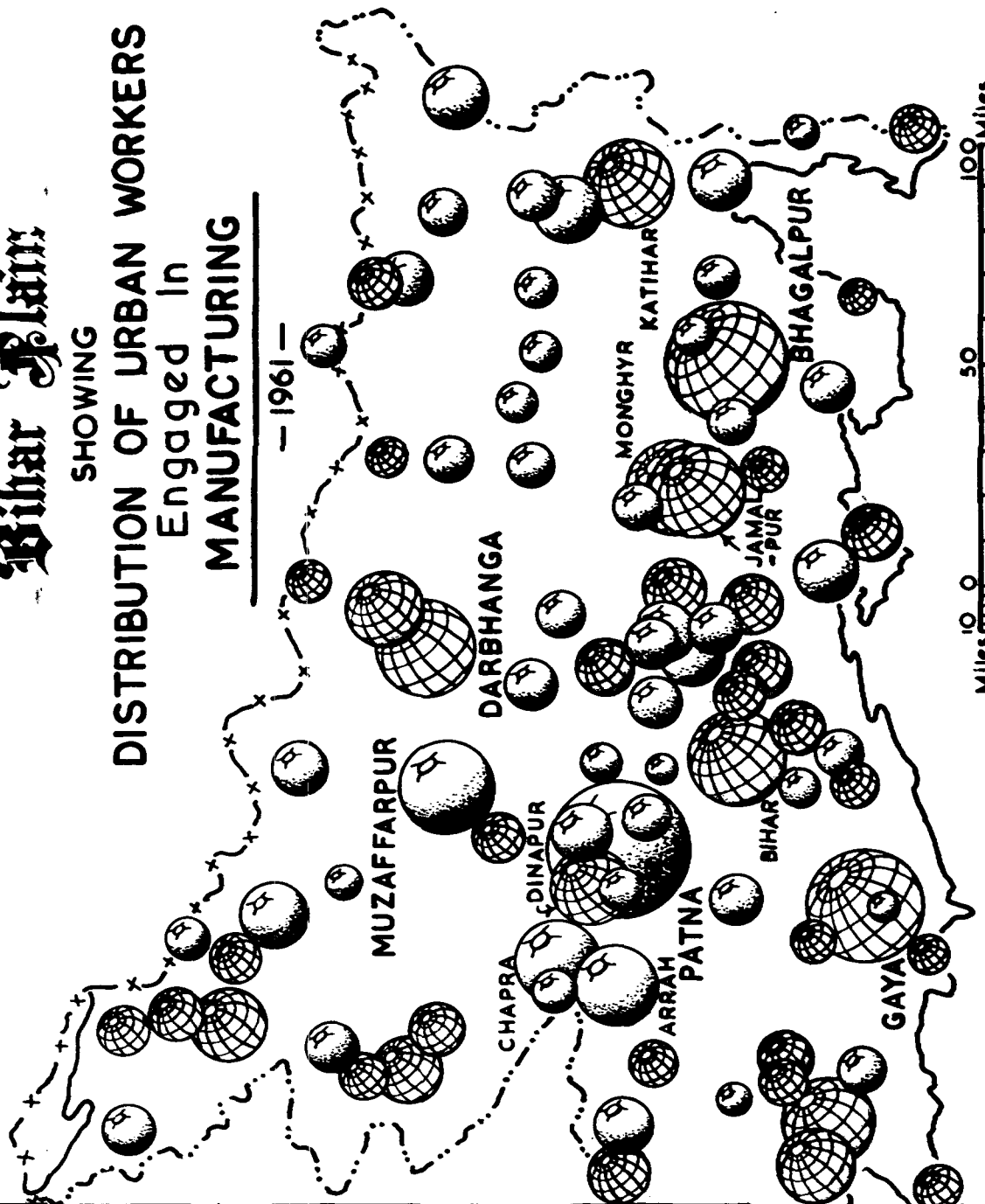
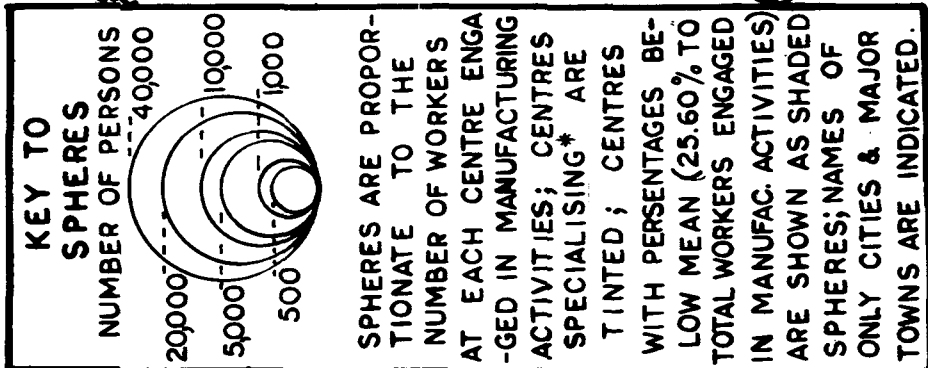
* the mean percentage of primary activity workers to the total workers for the 90 towns of Bihar Plain is found to be 22.63%; while the S.D. for the same is 14.10% [Major towns are underlined. No city occurs here]

Bihar Plain

SHOWING

DISTRIBUTION OF URBAN WORKERS Engaged In MANUFACTURING

— 1961 —



Mean for 90 Towns of Bihar Plain = 25.60%
S.D. " 7.66%

* Specialized Centres are those having 33.26% & above (after Nelson)

Manufacturing Towns

Although manufacturing of the type of Pittsburg of U.S.A. or Ruhr region of Germany or even of the Jamshedpur type of Bihar Plateau itself is lacking, the relatively smaller mills aided with considerable amount of house-hold activities, have had a great influence in the region since the days of the late Moghals. The early cotton and silk industries south of the Ganga in Patna and Gaya districts and saltpetre refining north of the mighty river facing Patna were of special interests. The whole of northern Bihar which was famous once for indigo has also been equally important from time immemorial for sugar industry in the west and recently for jute presses and mills in the east. Again the explosive or gun factory at Monghyr and the silk manufacturing activity at Bhagalpur are also not quite new. It is partly because of this historical background and long established interests that today no less than 40 urban centres show more than 25.60% (mean for 90 towns of the region) of the workers engaged in manufacturing (Fig.67). Even if the degree of specialization is considered, manufacturing towns are quite numerous. Some 14 towns have 33.26% (mean plus standard deviation percentage) of workers under manufacturing and over or in other words employing more than 1/3rd of the total working population. They have been designated 'Manufacturing Towns'. Unlike the towns of other categories these are numerous in the medium or minor towns as transport but are even shared by as well as in the cities (like Bhagalpur) and major towns (like Jamshedpur, Biharsharif and Monghyr) and are scattered throughout the region, with

special concentrations however, in the Son re-entrant and in the South Gangetic Strip (Fig.68). Dehri with its Rohtas factory of cement, paper, sugar and chemicals and Jamalpur with the famous Railway Locomotive Workshop are amongst the highly specialized manufacturing towns of the region attaining the symbolic significance of +3SD according to Nelson and ^hwere over half the labour force find employment in manufacturing. Jamalpur is one of the biggest locomotive repair workshop in India. Established in 1862, today it contains 28 constituent shops manufacturing all ferrous and non-ferrous engine components and other articles required for use by the railways and is noted for quick repairing of locomotives. It is said that 90% of the Eastern Railways needs in respect of D.O.plates and almost 100% of the engine cylinders^d for Eastern and other railways are met by this centre alone. Since October 1961, Steam Cranes are also being manufactured here. Besides employing about 14,000 persons in its workshop Jamalpur is also a training centre for technical staffs for ¹⁸various purposes in the railways, steel works and other concern. Special trains called 'Coolie trains' run at frequent intervals between Sultanganj in the east and Kajra in the west to facilitate the easy movement of the labour force from the surrounding villages to their industrial concern.

Kadhubani too in the north of Darbhanga district is equally significant a centre where about 45% of its working population is employed in some type of manufacturing activities.

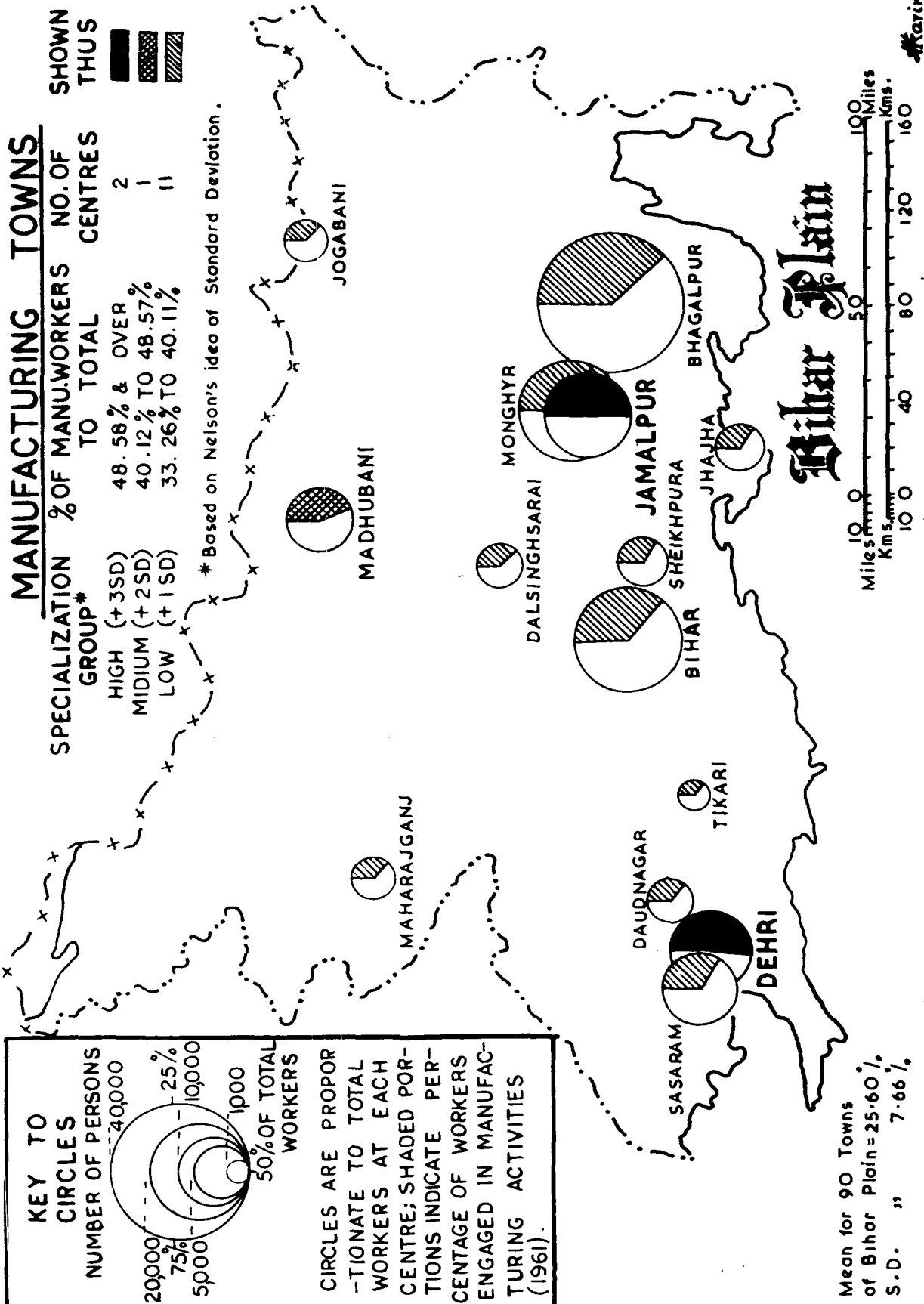
18. Roy Choudhary, P.C.- Bihar District Gazetteer-'Monthly'
(Patna 1960), page 179.

Among centres of low specialization groups in which 11 towns are included mention can be made of Bhagalpur, Monghyr, Bihar sharif, Sheikhpura, Jhajha, Jagabani and Sasaram. Monghyr lying close to Jamalpur is a renowned cigarette centre in Bihar Plain. Employing 2,500 workers the Peninsular Tobacco Co.Ltd., established in 1907, is today producing 1,300 cigarettes every minute. The old tobacco industry and the allied printing factory (established in 1925) since 1953 has formed the concern of Imperial Tobacco Co., of India. The chief raw material of unmanufactured leaf tobacco comes mainly from Andhra State while wrappers etc. are obtained from West Bengal. But Monghyr today is equally noted for the making of guns. The old Mir Qasim's factory was revived in 1890 and the fire shops were then making about 2,000 guns annually. By 1909 there were 25 shops and the guns were sold @ Rs.10/- each (the cheapest ever recorded). These private concerns that numbered 29 at the time of Independence are now controlled by the State Government. About 300 workers are employed and these are now housed in the jail compound which was the historic armoury of the days of Mir Qasim Nawab. The maximum price of a D.B.B.L. hammerless gun is estimated at Rs.800/- today, and Monghyr cartridges and guns have become very common these days.

Bhagalpur city employing 16,452 or 38.13% of its workers is a noted centre of silk industry since long. In the district of Bhagalpur some 36,000 persons of scheduled tribes

19. Roy Choudhary, P.C. - Bihar District Gazetteer- 'Monghyr'
(Patna 1960), page 179.

20. Ibid.



MANUFACTURING TOWNS

Specialization Group Urban Centres Workers engaged % to total
in Primary acti- workers
vities.

Highly specialized centres (+ 3SD..48.58% and Over)

1. Dehri	6,901	51.07%
2. Jamalpur	8,025	50.19%

Centres of Medium specialization (+ 2SD..40.12 to 48.57%)

3. Madhubani	4,245	44.64%
--------------	-------	--------

Centres of Low specialization (+ 1SD.. 33.26 to 40.11%)

4. Dalsinghsarai	1,696	38.68%
5. Bhagalpur*	16,452	38.13%
6. Biharsharif	8,912	36.91%
7. Laharajganj	1,498	36.75%
8. Jogabani	1,403	36.50%
9. Daudnagar	1,520	35.57%
10. Tikari	725	35.44%
11. Jhajha	1,629	34.89%
12. Monghyr	8,442	34.86%
13. Sasaram	4,016	33.85%
14. Sheikhpura	1,747	33.26%

Centres not specializing but where percentage above the mean (25.6%)

Siwan; Hussainabad; Mirganj; Chanpatia;
Varisaliganj; Nasriganj; Lakhisarai; Gaya*;
Bettiah; Darbhanga*; Begusarai; Shikarpur;
Katihar; Hisua; Barbigha; Hirmali; Jainagar;
Godda; Kharagpur; Dinapur; Laliganj; Buxar;
Pakaur; Sugauli; Jagdishpur; Sherghati. 26
Grand Total * 40

* Denotes cities; major towns (population over 50,000) are only underlined.

✓ The mean percentage of workers engaged in manufacturing to the total workers for the 90 towns of Bihar Plain is found to be 25.60%; The S.D. for the same is 7.66%.

rear tassar silk and its 14,000 handlooms and 250 powerlooms located mainly ^{at} Hathnagar and Champnagar, the western suburbs of Bhagalpur city, some 0.8 million yards of pure tassar and 3.5 million yards of mixed fabrics are produced every year and indeed ²¹ the city produces the largest quantity of tassar silk in India. This is mainly a concern of Marwari organisers and Muslim skilled workers. It is said that Bhagalpur has got the largest colonies ²² of Marwaris in Bihar. But its silk weaving is still an indigenous small-scale and cottage industry and unfortunately this greatest textile centre of Bihar has not yet been developed into a large- ²³ scale silk mill or sugar-refining mill centre although with respect to both of these, geographical conditions are much favourable here.

Sheikhpura in Monghyr south district is noted for the ²⁴ manufacture of hookah tubes while Jhajha in the Kiul valley of the same district is an important centre for the manufacture of ²⁵ 'bidi'. Some 30,000 people residing in the Jhajha anchal get ²⁶ employment in manufacturing bidis at and around Jhajha. Jogabani in Purnea North facing Biratnagar in Nepal, is a notable manufacturing town of saw machine installations with allied

21. These figures are for 1959 -- Roy Choudhary, Bihar District Gazetteer, 'Bhagalpur' (Patna 1962), page 237.

22. Ibid, page 235

23. Near about Bhagalpur to Colgong in the east and Amarpur in the west and other adjoining areas, a considerable quantity of sugarcane is grown.

24. A long linen tube used in 'Hookah', the hubble bubble. It is locally known as 'Fatah Peinch'

25. A small revenue unit equivalent to police station.

26. Roy Choudhary, P.C. - Bihar District Gazetteer, 'Monghyr' (Patna 1960), page 482.

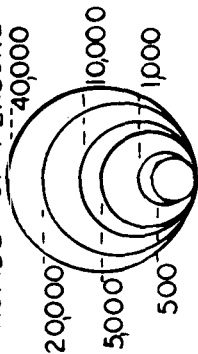
Bihar Plain

SHOWING
DISTRIBUTION OF URBAN WORKERS
Engaged in
TRADE & COMMERCE

— 1961 —

KEY TO SPHERES

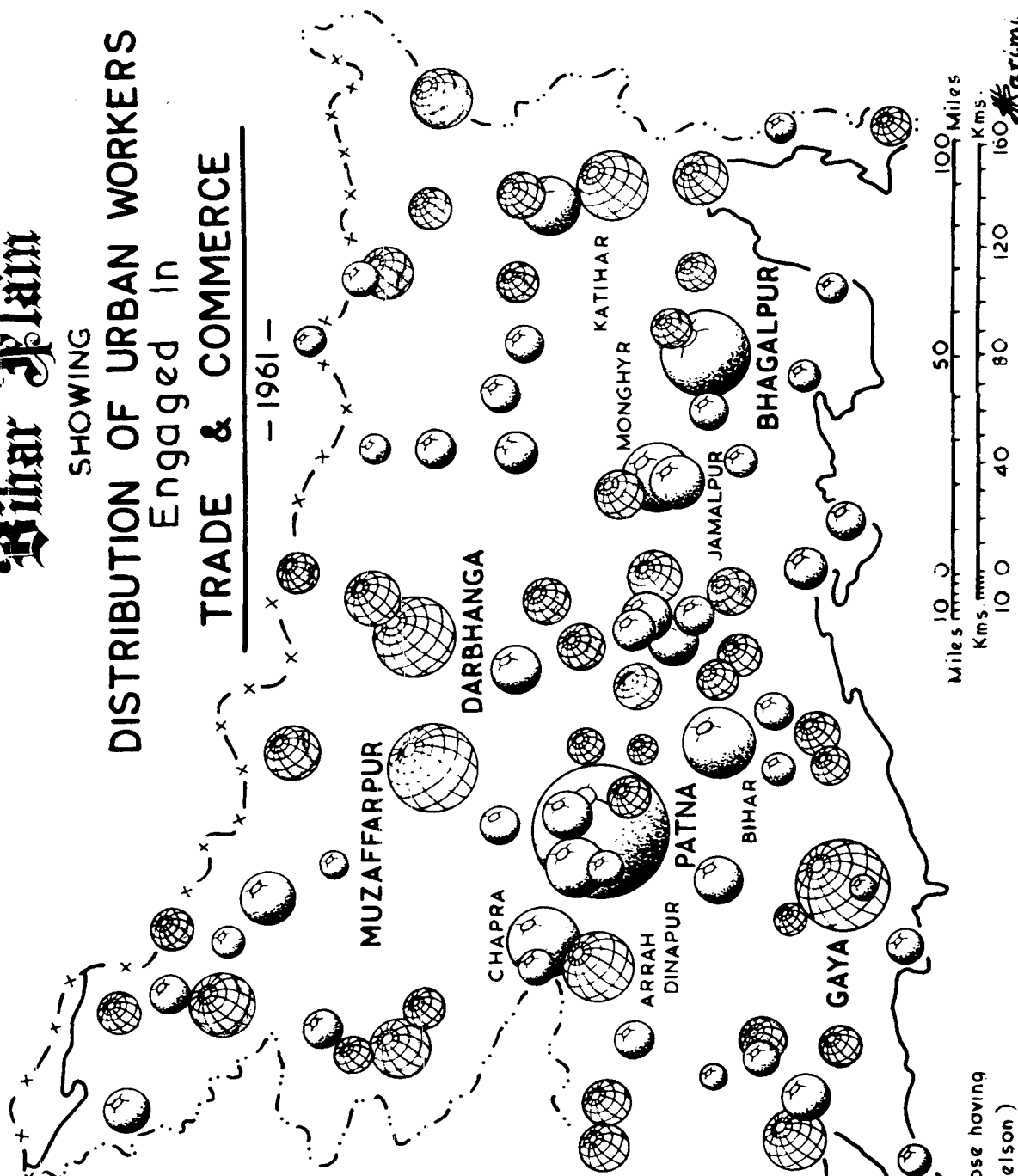
NUMBER OF PERSONS
20,000
10,000
5,000
1,000



SPHERES ARE PROPORTIONATE TO THE NUMBER OF WORKERS AT EACH CENTRE ENGAGED IN COMMERCE. CENTRES SPECIALISING ARE TINTED; CENTRES WITH PERCENTAGES BELOW MEAN (15.70% TO TOTAL WORKERS ENGAGED IN COMMERCE) ARE SHOWN AS SHADED SPHERES; NAMES OF ONLY CITIES & MAJOR TOWNS ARE INDICATED.

Mean for 90 Towns of Bihar Plain = 15.70%
S.D. " 4.95%

* Specialized Centres are those having 20.65% & above (after Nelson)



soft wood utilization industries such as a match factory and a toy manufacturing centre. Indeed Jogabani is the best toy and match centre in the whole of the Bihar Plain. Sasaram on the Kaimur apron in Shnhabad district is noted for the manufacturing of lacquered pottery and carpet of cotton and wool.

The future manufacturing towns of the region appear to be growing at important railway junctions, such as Katihar and Barauni. Their emergence is deeply associated both with industrial as well as commercial and transport facilities.

Commercial (Business Hart & Market) Towns

Commercial activity is an important feature specially of northern section but its role varies considerably from town to town. Some 43 towns (Fig.69) have above the mean percentage of workers engaged in trade and commerce which is 15.70%. In the SD analysis methods, however, only 16 towns qualify for being designated 'Commercial', and this function is well developed in the medium-sized and minor towns which act as retail stores serving the ultimate consumer in the various localities. There is a definite limit to the area which can conveniently be served by a retail establishment and even if their limit is different in various lines of business, it cannot be wide. It is probably due to this that a number of smaller commercial centres appear to have emerged out. The absence of cities and major towns in the list is not indicative of a lack of

commercial activity in them. The cities and major towns on the other hand invariably are whole-sale trade centres and a little

COMMERCIAL TOWNS

Specialization Group. Urban Centres	Workers engaged in commercial activities	% to total workers
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Highly specialized Centres (+ 3SD.. 30.54% and above)

Nil

Centres of medium specialization (+ 2SD.. 25.60 to 30.54%)

1. Khagaria	1,163	28.57%
2. Jainagar	716	26.57%

Centres of Low specialization (+1SD.. 20.65 to 25.59%)

3. Haugachia	683	25.30%
4. Forbesganj	1,492	24.76%
5. Rusera	981	24.80%
6. Siwan	2,142	24.54%
7. Dalsinghsarai	1,060	24.17%
8. Banmankhi	683	24.00%
9. Sitamarhi	1,802	23.96%
10. Ramaul	809	22.67%
11. Daudnagar	939	22.17%
12. Kasba	1,040	21.61%
13. Kishanganj	2,296	21.61%
14. Fatwa	895	21.56%
15. Bettiah	2,634	20.67%
16. Lakhisarai	1,232	20.65%

Centres not specializing but whose percentage are above the mean (15.70 %)

*
 Sasaram; Muzaffarpur; Lirganj; Begusari;
 Laharajganj; Madhubani; Barbigha; Hissua;
 Barh; Bakhtiarapur; Nawada; Dumraon; Enabhum;
 Aurangabad; Araria; Lahar; Shikarpur; Tikari;
 Buxar; Darbhanga*; Colgong; Pakaur; Arrah;
Katihar; Sahibganj; Sheikhpura; Gaya* = 27
 Grand Total = 43

✓ The mean percentage of workers engaged in trade and commerce to the total workers for the 90 towns of the Bihar Plain is found to be 15.70%; the SD for the same is 4.95%

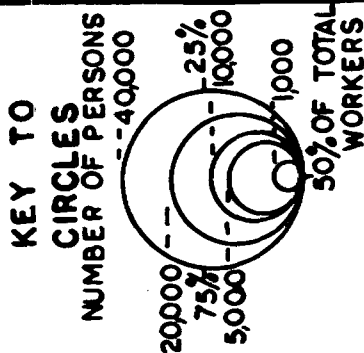
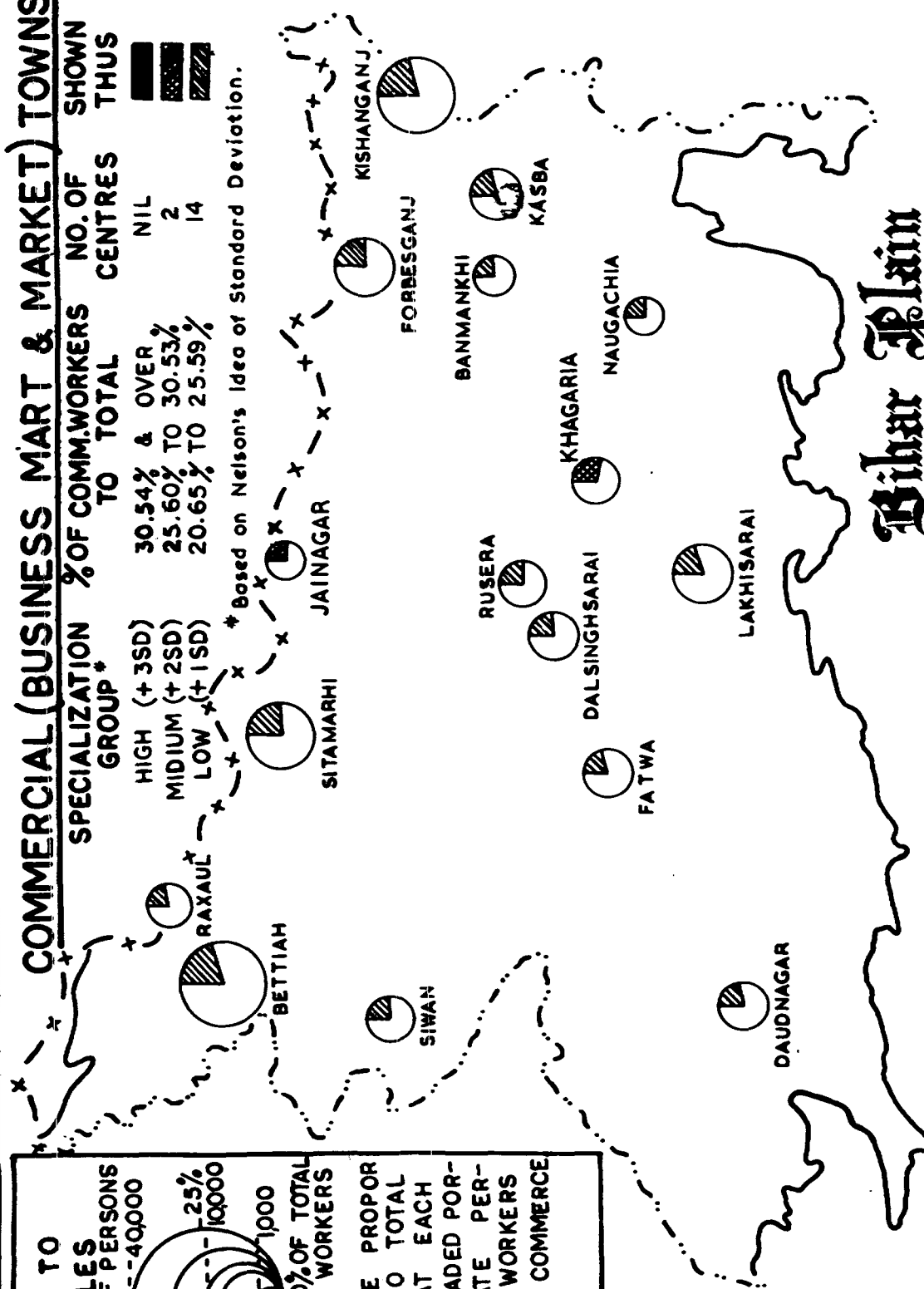
* Denotes cities; major towns (Population over 50,000) are underlined.

FIG. NO.70

COMMERCIAL (BUSINESS MART & MARKET) TOWNS

SPECIALIZATION GROUP*	% OF COMM. WORKERS TO TOTAL	NO. OF CENTRES	SHOWN THUS
HIGH (+3SD)	30.54% & OVER	NIL	[Solid black circle]
MEDIUM (+2SD)	25.60% TO 30.53%	2	[Circle with diagonal lines]
LOW (+1SD)	20.65% TO 25.59%	14	[Circle with horizontal lines]

* Based on Nelson's Idea of Standard Deviation.



CIRCLES ARE PROPORTIONATE TO TOTAL WORKERS AT EACH CENTRE; SHADED PORTIONS INDICATE PERCENTAGE OF WORKERS ENGAGED IN COMMERCE (1961).

Mean for 90 Towns of Bihar Plains = 15.70 %
S.D. " 4.95 %



retailing is also carried on but these activity groups, even though employing greater number of workers in comparison to smaller urban units, occupy lower percentage in their respective functional structure. The great city of Patna for example on account of its wholesale activities and also retail trade, employs 17,129 workers (about 8 times the workers engaged in commerce at Kishanganj or about 7 times that at Khagaria, the most notable business mart of Bihar Plain) yet the city is below the average percentage (15.70 %) and far below the lowest specialization (+1SD) percentage of 20.65%.

The greatest concentration of strongly marked commercial towns is found in a wide belt stretching through the northern border-lands of North Bihar along U.P., Nepal and West Bengal (Fig.70). This is indicated by towns like Sivan, Bettiah, Raxaul, Sitamarhi, Jaingar, Forbesganj, and Kishanganj. Bettiah in the west along the border of the U.P. and Kishanganj in the east along Bengal border are greatest centres employing more than 2,000 workers in each case. Of the 4 towns namely Raxaul, Sitamarhi, Jainagar and Forbesganj busy in trade with Nepal, Sitamarhi in Muzaffarpur district in the west and Forbesganj in Purnea district in the east are notable where 1,500 and 1,800 workers respectively are engaged in this activity group. The recent growth of the transfrontier trade with Nepal has added to the importance of the commercial significance of these towns. The other notable concentration occurs in the interior plains of Eastern North Bihar comprising portions of southern Darbhanga,

Monghyr North and western Purnea districts which are of intensive agricultural produce like jute, tobacco, etc. Many persons are engaged in this area in storehouses, grading, pressing and packing the products for inter-district and inter-State market. Towns like Rusera, Dalsinghsarai, Khagaria, Naugachia, Banmankhi and Kasba fall within this section. These have emerged as business towns specially because of their favourable location with respect to communication lines. These are essentially collecting centres of rice, tobacco and jute and are noted for their trade in these commodities. Their growth is attributed mainly to the opening of the Samastipur-Khagaria branch of the railway line in 1915. ²⁷ Khagaria in this zone grew considerably because of the extensions of the lines east, north and even to south to Monghyr ghat and these lines rendered it a commercial centre for a considerable area. Katihar in this section, though at present a specialized transport town, is fast developing into a big commercial centre as well. Its commercial workers constitute 16.1 % of the total working population, well above the arithmetic mean, though it falls short of Nelson's specialization (+180) group by only 4%. It is indeed the busiest trade mart in Purnea district busy in trade with Nepal and West Bengal and is a notable market town for glass-ware, bidi leaves and jute.

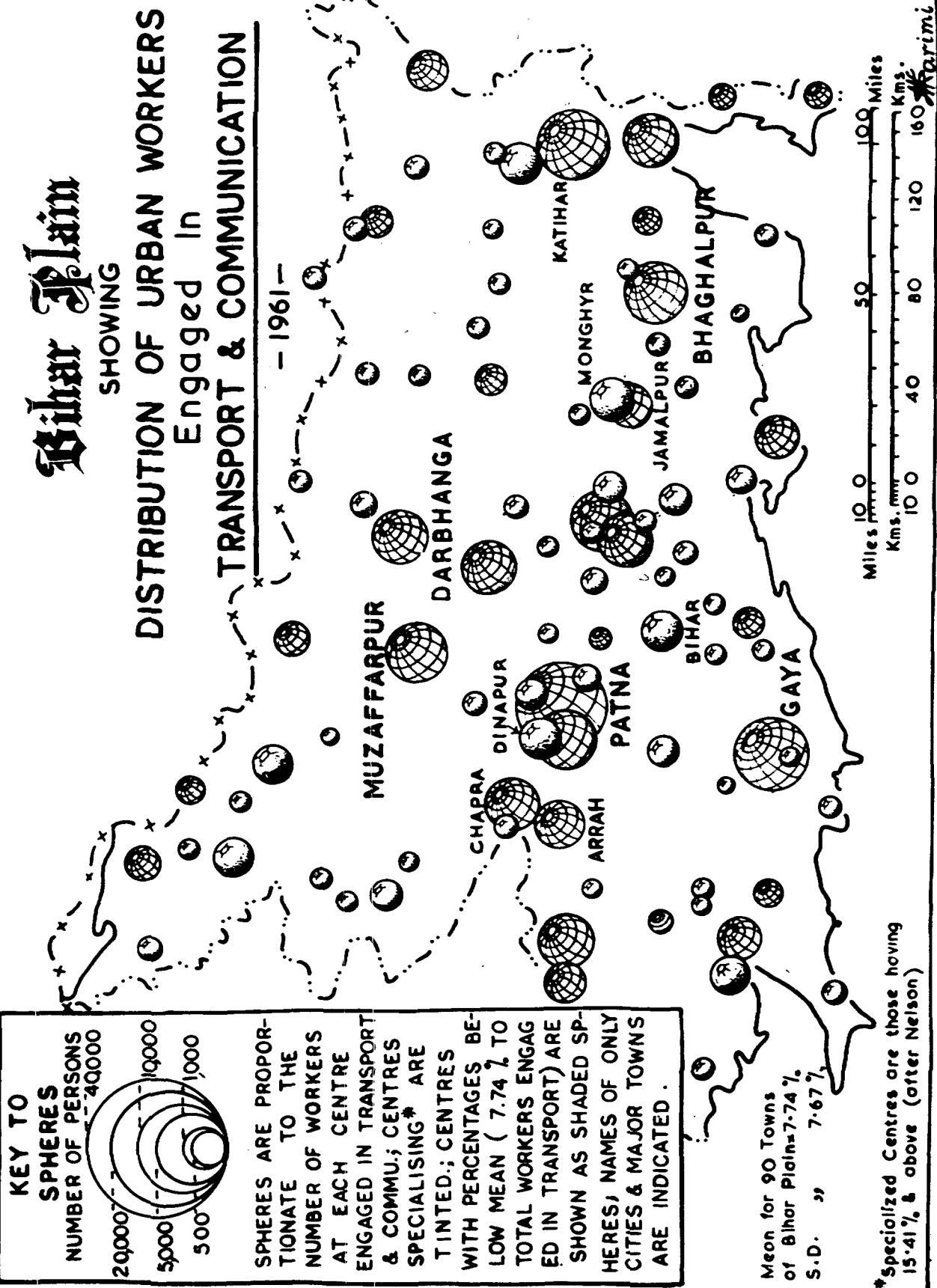
Daudnagar, Fatwa and Lakhisarai are the only towns considered commercial in South Bihar. Daudnagar and Fatwa (Fatuha)

27. Lecky, W.G.- Census of India 1931, Volume VII, Bihar & Orissa Part I Report, page 96.

as of late Medieval (Muslim) period are important trade marts along the Son and Ganga respectively, and considerable amount of grains and other products move down the river Son and upstream along the Ganga for export to Banaras and Mirzapur districts in the U.P. in the west and down the Ganga in the Hooghly region of West Bengal in the east. Lekhisarai unlike the other two trade marts and business centres of South Bihar, is comparatively of recent origin. Its location at the junction of the main line, the Sahibganj loop and the South Bihar (Gaya-Kiul) lines of Eastern Railway has greatly facilitated its growth as commercial town. Sahibganj, Barbigha and Nawadah etc. although not included in the list are other centres of commercial activities. All of these towns have percentage of workers engaged in this activity group as above the mean and their commercial activity invariably is linked up with the development of roads and railways.

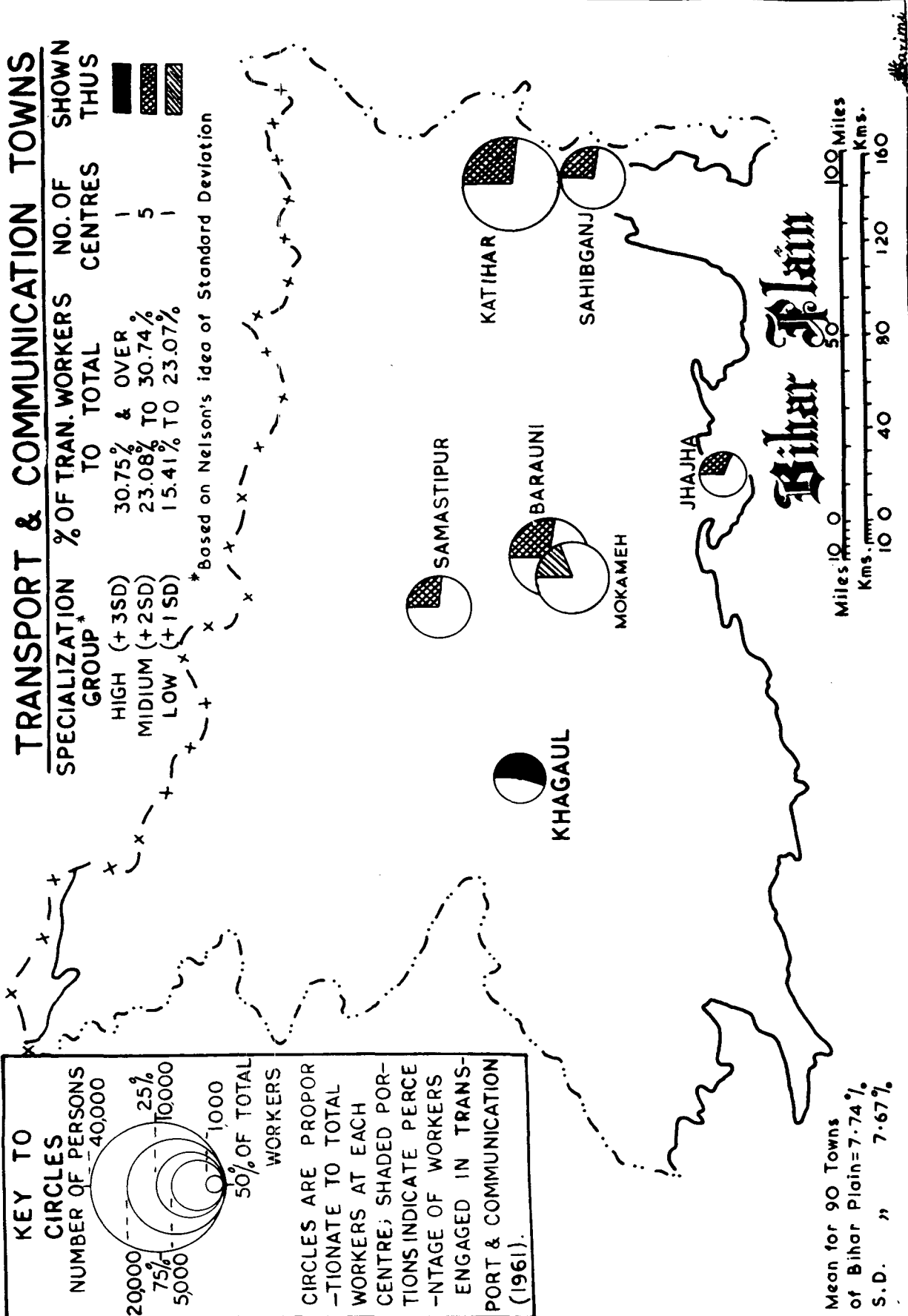
The chart above and the map (Fig. 70) clearly reveal that no commercial centre in the region is of high specialization (+ 3SD) group. Only Jainagar in Darbhanga district along the Nepal border and Khagaria in Monghyr north district show relatively high specialization, so that these are commercial towns of medium specialization group where, in each case, some 26 to 28% of the working population are engaged in trade and commerce.

Transport and Communication Towns- Transport and communication have since the very beginning of the 20th century formed the backbone of all other activities. Great developments with respect



to these have been taking place since then. Important railway lines and good metalled roads were constructed throughout the region. Very recently the nationalization of road transportation has re-oriented the whole structure. It is because of these that in some 30 towns, transportation and communication are carried on by workers whose percentage is above the mean (7.74%) Fig.71. Of these 7 towns namely, Khagaul (Danapur Railway Station), Jhajha, Barauni, Sahibganj, Katihar, Samastipur and Mokameh are designated 'Transport Towns'. Unlike other functional towns the percentage of workers in them varies considerably from town to town and is sufficiently high with respect to the mean of 7.74% for the 90 urban centres of the region. On account of these variations and considerably high percentages, except for Mokameh which is of low specialization centre, 5 of the other centres are of medium (+ 2SD) specialization while Khagaul with 3,136 workers engaged in this function shows as high a percentage as 54.69% and is a transport town of high (+ 3SD) specialization (Fig.72). Railways in contrast to highway traffic, constitute one of the most important city forming service population. Railway workshop (Jamalpur and Samastipur), Loco sheds (such as Khagaul, Gaya, Mokameh, Lakhisarai i.e. Kiul, Jamalpur, Jhajha and Sahibganj), divisional points where the trains change engines and crew (Khagaul, Jhajha, Jamalpur, Gaya and Sahibganj) classification yards (such as at Mokameh and Narkatiaganj i.e. Shikarpur) etc. have all a sporadic occurrence. As these are mostly located in the

FIG. NO. 72



medium or minor towns, there have very often become the leading employers and the greater percentage of workers in such towns depend for their livelihood on railways.

TRANSPORT TOWNS

Specialization Group	Urban Cent res	Workers engaged in Trans. & Communication.	% to total workers
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Highly specialized Centres (+ 3SD) .. 30.75% and above)

1. Khagaul	3,136	54.69%
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Centres of Medium Specialization (+ 2SD .. 23.08 to 30.74%)

2. Jhajha	1,426	30.54%
3. Barauni	3,800	27.48%
4. Sahibganj	2,439	26.98%
5. <u>Katihar</u>	5,437	26.49%
6. Samastipur	2,259	26.28%

Low specialized centres (+ 1SD .. 15.41 to 23.07%)

7. Mokameh	2,162	18.94%
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Centres not specializing but whose percentage are above the mean (7.73)

Shikarpur; Rajmahal; <u>Gaya*</u> ; Bakhtiarpur; Burr; Rasaul; Colgong; Bikhanganj; <u>Luzaffarpur*</u> ; Dehri; Saharsa; <u>Jamalpur</u> ; <u>Patna*</u> ; Pakeur; Nawada; Aurangabad; <u>Bhagalpur*</u> ; Arrah; <u>Chandra</u> ; Kishanganj; <u>Darbhanga*</u> ; Forbesganj; Khagaria; Sitamarhi - Total	24
Grand Total	31

✓ The mean percentage of Transport workers engaged for the 90 towns of the region is found to be 7.74%; the S.D. is found to be 7.67%

* Denotes cities; major towns (Population over 50,000) are only underlined.

All of the seven specialized transport towns as well as some of those above the mean percentage but below the +1SD rating are

outstanding examples of 'railway towns'. With the exception of Katihar which is a major town, they are usually small medium-sized towns serving divisional headquarters, terminal stations of divisions and junction points with distinct railway colony settlements along important lines of Eastern, North Eastern and N.E. Railways.

Barauni and Katihar north of Gaya in N.E. Railway and Patna, Gaya, Mokameh and Lakhisarai (Kiul) in South Bihar are important railway junctions and have become foci of a great number of rail routes. Katihar is a very big railway junction and the busiest in the metre gauge in the entire North Bihar Plain. It is the junction for seven railway sections -- Maniharighat, Khajuriaghat (via Barsoi & Malda), Jogabani, Radhikapur, Amingaon (Silliguri Section), Saharsa and Barauni sections. Gaya with about 6,000 transport workers constituting 12.49% of the total workers is an important railway junction on the Chord Line of the Eastern Railway. With a loco shed and good railway yard and branch lines like Patna-Gaya and South Bihar Section (Gaya-Kiul) connecting this important railway station on the chord line with Patna and Lakhisarai (Kiul) on the main line, Gaya has much to depend upon railways. There are actually two interests at Gaya -- the pilgrim traffic and the railway traffic since Gaya is a railway junction connecting important railways. Besides, in recent years Gaya has become an important nodal point with respect to highway traffic so that buses at regular intervals now run for Jehanabad, Nawada, Rajgir and Aurangabad etc to towns over the

Bihar Plateau; Although at present Gaya is a diversified town specialising in no function, there is every reason to suppose that Gaya will maintain its transportation and communication significance and will in near future emerge an important transport town in the region. The recent Rajendra Bridge over the Ganga, first of its kind on the great Ganga Barrier has enhanced the importance of Mokameh in the south and Barauni in the north of the river. Khagaul is noted for its divisional Superintendent's office and staff while Jhajha and Jamalpur mark the terminal points of Dinapur Division. Similarly Sahibganj is the regional railway centre for the loop line section of the Burdwan division of Eastern Railway. Its original development between 1881-1891 was due to the construction of the 'loop line' of the East Indian Railway (now Eastern Railway) and ever since it has been growing in importance as a railway settlement and a centre of trade. Apart from all these considerations Khagaul, Katihar, Jhajha and Jamalpur are specially noted for railway settlement colonies and indeed the railway colonies at Jamalpur and Khagaul are amongst the well-planned settlement colonies and possess good urban amenities in the entire region. The railway settlement at Khagaul, although not increasing rapidly, is not likely to lose its importance.

The outcome of the development of road transport and its nationalization effect is yet to be awaited. Nawada, Bihar, Gaya, Bhagalpur and Patna in South Bihar and Muzaffarpur, Chapra, Darbhanga and Purnea in North Bihar are bound to emerge in near

Bihar Plain

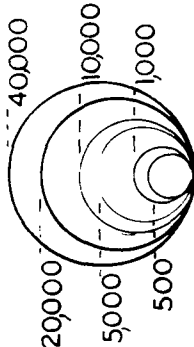
SHOWING
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MISC. SERVICES

— 1961 —

KEY TO

SPHERES

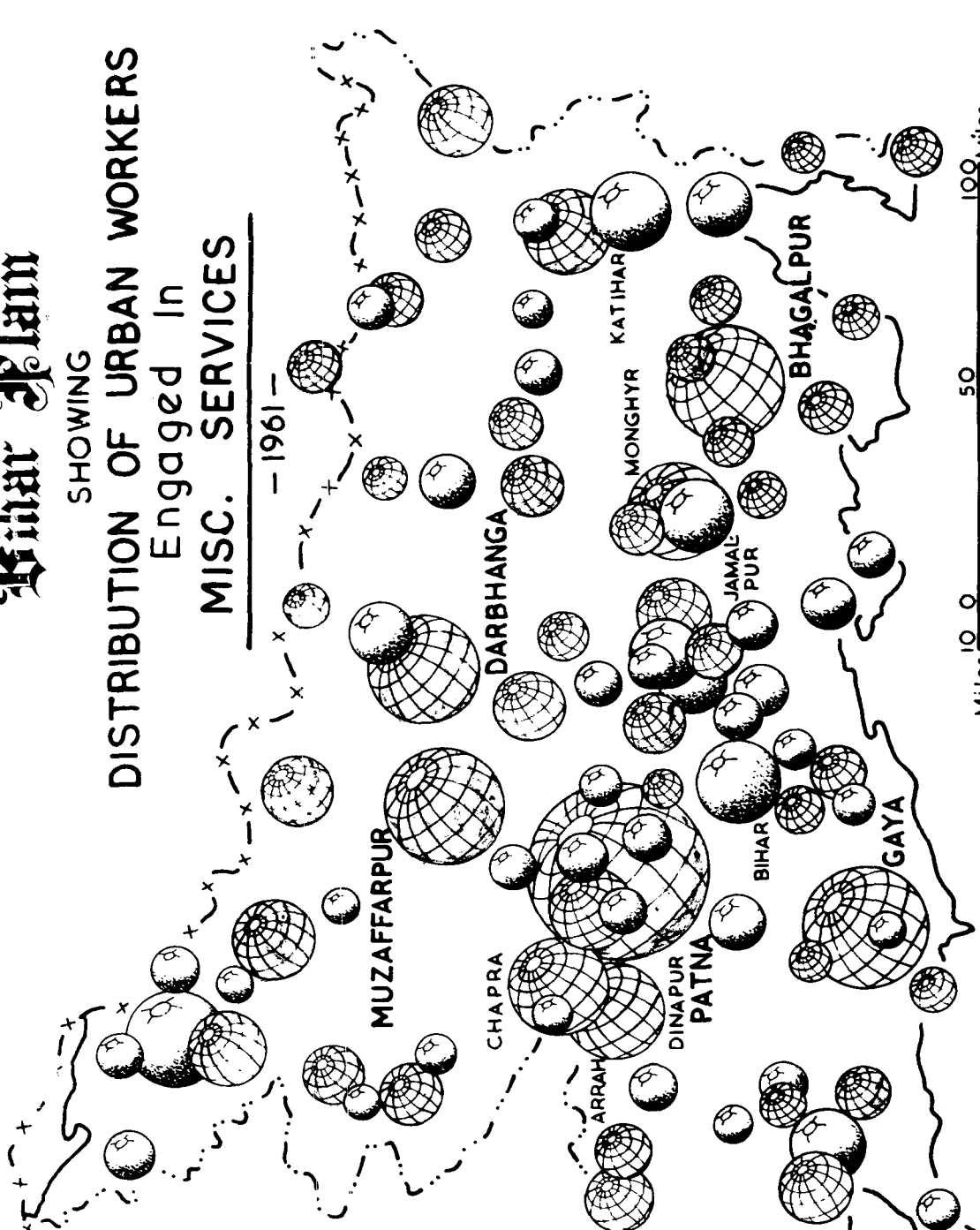
NUMBER OF PERSONS



SPHERES ARE PROPORTIONATE TO THE NUMBER OF WORKERS AT EACH CENTRE ENGAGED IN MISC. SERVICES ; CENTRES SPECIALISING ARE TINTED ; CENTRES WITH PERCENTAGES BELOW MEAN (28.33% TO TOTAL WORKERS ENGAGED IN MISC. SERVICES) ARE SHOWN AS SHADED SPHERES; NAMES OF ONLY CITIES & MAJOR TOWNS ARE INDICATED.

Mean for 90 Towns of Bihar Plain = 28.33 %
S.D. 8.22 %

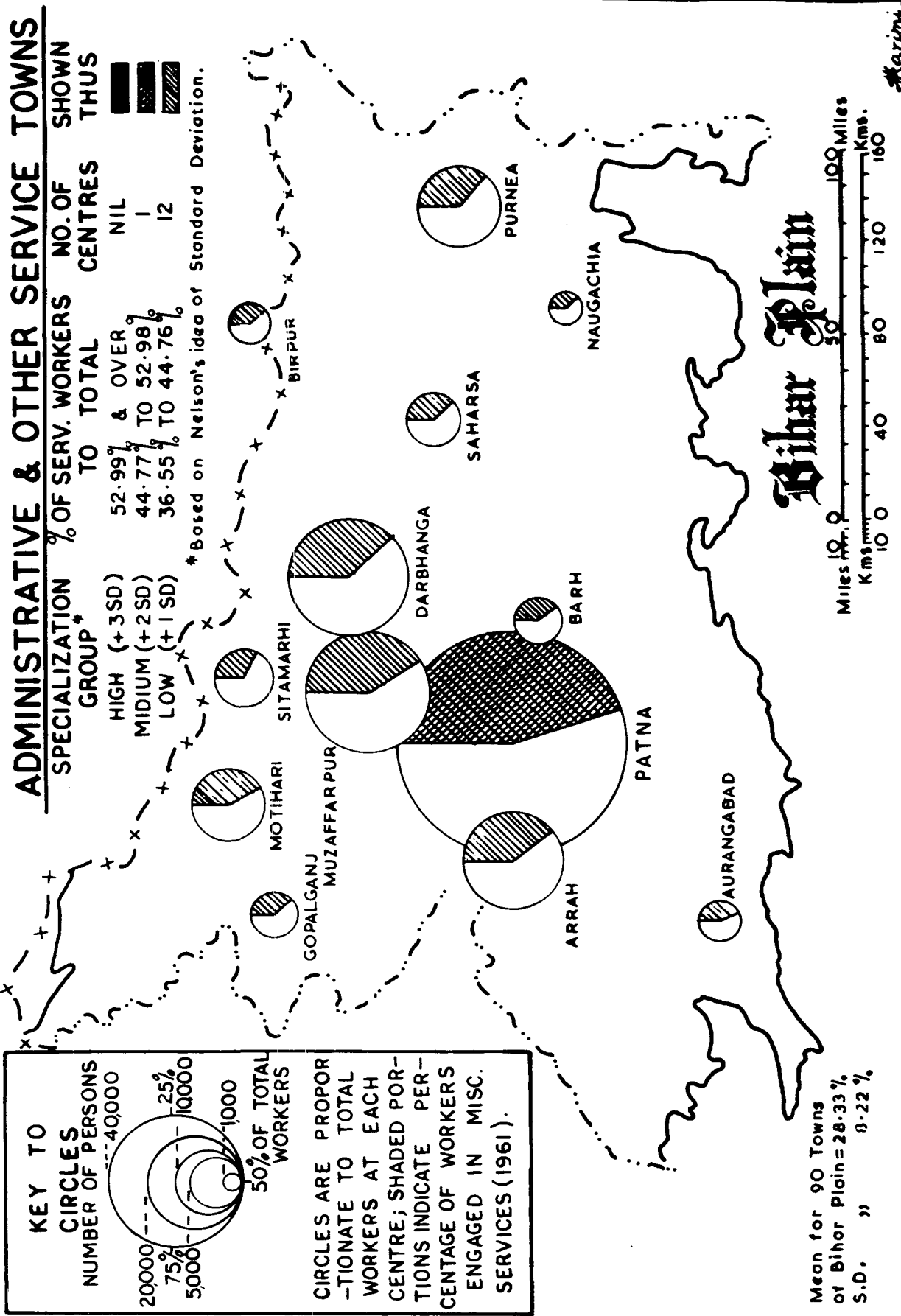
* Specialized Centres are those having 36.55% & above (after Nelson)



future as notable highway centres in the region. At present sufficient spaces appear to have been reserved for bus depots and the related staff at these places. From these depots a number of buses at regular intervals ply in various directions. Patna, Gaya and Bhagalpur in South Bihar and Muzaffarpur, Darbhanga and Purnea in North Bihar are amongst the greatest urban highway centres today. Biharsharif, Nawada, Aurangabad, Chapra and Sitamarhi are, however, centres of the second order. A good number of people in these towns are engaged in this function, but because of their big sizes (for these are usually city or major town), their transport percentages are not sufficiently high to make them distinct.

Administrative and Other Service Towns - Miscellaneous Service activities constitute on the whole a greater proportion of city-forming population than transport, commerce or even manufacturing. These never attain a very high percentage like transport or manufacturing of more than 50% of the total working population, so that centres of very high specialization is lacking in this category, yet the percentage under this activity is relatively high for all towns and it ranges between 37.5 to 45.1 (Fig.73). In this way it is evident that the centres unlike other ~~functions~~ towns ~~and~~^{of} other functions do not show much differences in them with respect to percentage figures, though they vary considerably with respect to the number of workers in them. Apparently when the 'Service' percentage dominates a centre, it is likely to be an

FIG. NO.74



SOURCE OF DATA :- CENSUS OF INDIA REPORT 1961, VOL 4, PART II A (PATNA 1963)

administrative centre, though educational, medical and other miscellaneous service workers may also constitute the bulk of such workers.

Public administration comprises all forms of federal, state and local Government. In this group are included employees of the postal, railway and other government offices and the armed forces. It is thus the leading town forming activities chiefly in urban centres of two types (i) political capitals (State, district or sub-divisional headquarters and (ii) towns with military installations i.e. cantonments. So far as the Bihar Plain is concerned, this function is distinctly apparent in a major town like Arrah and three cities -- Patna, Muzaffarpur and Darbhanga (Fig.74). The percentage of miscellaneous service workers in 1961 in these towns were -- Patna 94.5%, Muzaffarpur 44% Darbhanga 39% and Arrah 40%. As a consequence of the concentration of political and administrative activities in the city, a great variety of organization has found it expedient to locate their headquarters in the State capital or at least to maintain an office in Patna. Such interest groups and lobbies are common not only in the capital city of Patna, but lobbying is an important activity even in other cities which are the district capitals like Muzaffarpur, Darbhanga, Gaya and Bhagalpur. Patna being the State capital is the dominant political and administrative centre in the entire plain, where 53,409 persons constituting 45.44% of its total workers are office employees,

28. Alexandersson, G. - 'The Industrial Structure of American Cities' (Stockholm, 1956), page 116.

private or government. The city has a central location with respect to population distribution and its site on the Ganga front having a navigation in the river Ganga and a link to the northern part of Bihar Plain are contributory factors. But although the city did not grow as a centre of commerce and manufacturing, as it ought to have been on account of its location both with respect to railroad and river traffic, the ever-increasing activities of the federal and State Governments have proved to be a sufficient basis for a large metropolis. The huge government buildings, apart from the western suburban section of New Capital area, are given distinct position even in the heart of the old and new sections of the city and these help in differentiating Patna from other big cities in Bihar.

Secondary and higher secondary schools, with the teaching staff and other personnel are important features of smaller towns but really speaking it is the institutions of higher education such as colleges or universities which constitute another important element in the city-forming population. Such institutions in Bihar Plain are usually located in the major towns while the universities occur in the cities or divisional headquarters. Till recently the Old Patna University was the only affiliating University in the entire region. This is now split up into three Universities so far Bihar Plain is concerned, so that now one university occurs in each of the Tirhut, Bhagalpur and Patna Divisions. The headquarters of these universities except for Patna division are located at the divisional headquarters. In this way

the post-graduate departments and central offices of Bihar University for the Tirhut Division are located at Muzaffarpur city while those of Bhagalpur University at Bhagalpur city. The central activity of the Magadh University, an affiliating University for Patna division is located at Gaya city. The Old Patna University, now a residential university, is located at Patna. In this way all the four cities of the region have a University function of their own. Darbhanga, the fifth city in the region is more than compensated by the creation of a yet another Sanskrit University. These institutional headquarters with a number of associated colleges and post-graduate departments thus contribute considerably towards the urban growth of these cities.

Apart from these, a number of degree colleges and higher Secondary Schools have also sprung up at various other smaller centres, so that Arrah, Bettiah, Madhubani, Chapra, Biharsarif, etc. are other college towns.

Like the political capitals, the military towns etc. cantonment such as Dinapur Cantt. or others at Muzaffarpur, Katihar etc. have also to add to the number of service workers. These military installations are as a rule located with regard to the needs of national defence and are planned and built by the federal government. Location of these army posts and airforce bases, are not too far from established cities. In course of time however these separate military posts appear to merge with the nearby municipalities so that at the end these constitute

a good city forming population as we find today in case of Dinapur, Muzaffarpur etc.

ADMINISTRATIVE AND SERVICE TOWNS

Specialisation Group	Urban Centres	Workers engaged in Misc. services	% to total workers
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Highly specialized centres (3SD .. 52.94% and above)

Nil

Centres of medium specialization (2SD .. 44.77-52.98%)

1. <u>Patna</u> *(State Capital)	53,409	45.44%
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Centres of Low specialization (1SD.. 36.55-44.76%)

2. <u>Muzaffarpur</u> *(Distt. Hq.)	14,997	44.07%
3. <u>Aurangabad</u> (Sub-Div. Hq.)	1,660	43.06%
4. <u>Motihari</u> (Distt. Hq.)	4,824	41.90%
5. <u>Barh</u> (Sub-Div. Hq.)	2,113	40.05%
6. <u>Arrah</u> (Distt. Hq.)	8,677	39.85%
7. <u>Darbhanga</u> (Distt. Hq.)	12,017	33.63%
8. <u>Sitamarhi</u> (Sub-Div. Hq.)	2,905	38.63%
9. <u>Saharsa</u> (Distt. Hq.)	2,157	38.08%
10. <u>Gopalganj</u> (Sub-Div. Hq.)	1,941	37.95%
11. <u>Naugachia</u>	1,016	37.63%
12. <u>Birpur</u>	1,396	37.04%
13. <u>Purnea</u> (Distt. Hq.)	5,628	36.89%

Centres not specializing but whose percentages are above the mean (28.33%)

Hawada; Buxar; Samastipur; Madhepura;
 Golgong; Gaya*; Longhr; Bakhtiarpur; Sul-
 tanganj; Forbesganj; Bhagalpur*; Begusarai
 Kishanganj; Khagaria; Rusera; Pakaur;
 Bhabhua; Sherghati; Jainagar; Godda; Mirmali;
Chapra; Dinapur; Bettiah; Hajipur; Dumraon
 Araria; Kharagpur; Tikari; Rajmahal;
 Hasriganj; Rajgir; Banka; Barahiya;
 Siwan; Sasaram

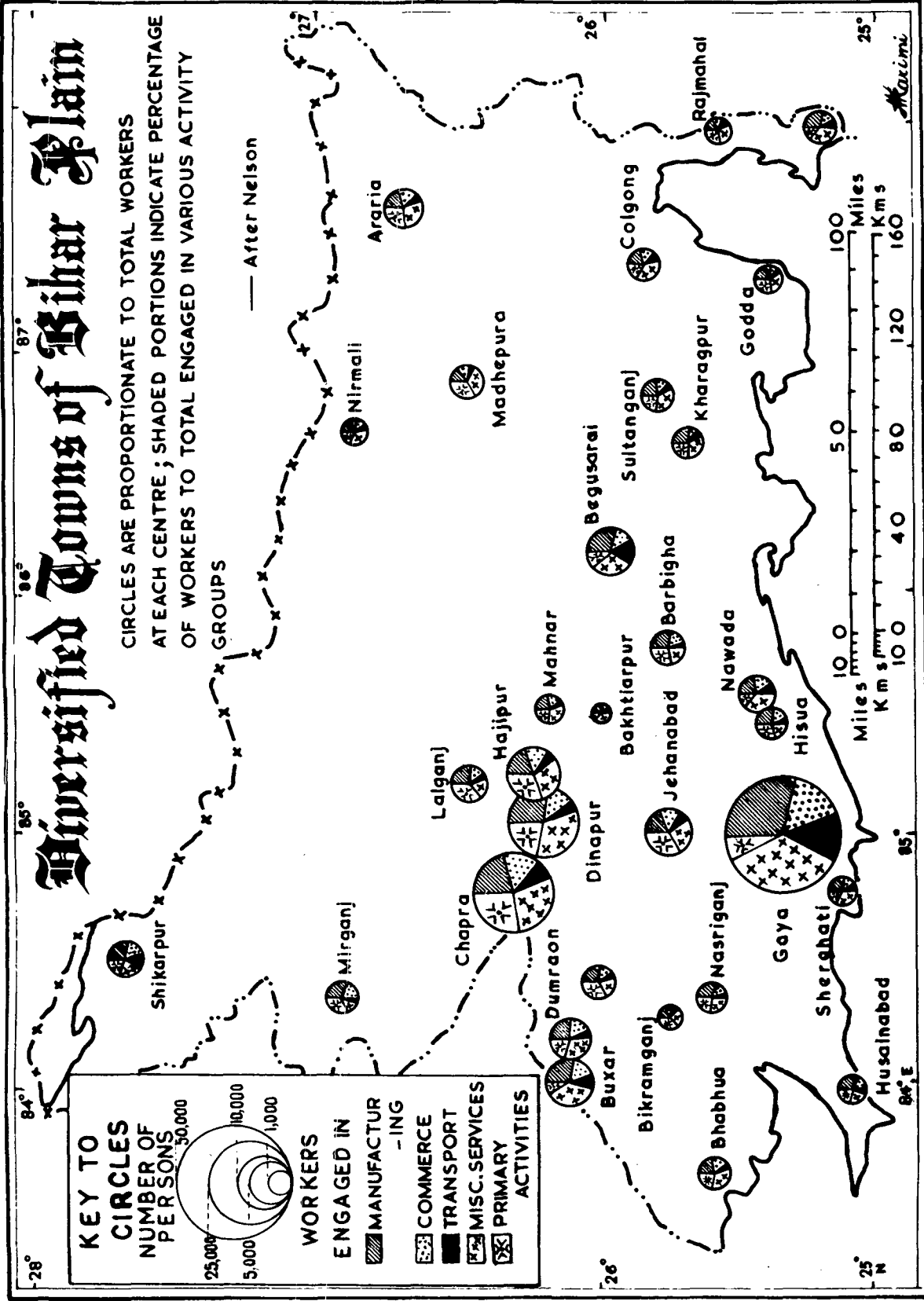
= 36

Grand Total = 49

* Denotes cities; major towns (Population over 50,000) are underlined.

✓ The mean percentage of misc. service workers to total workers for the 90 towns of Bihar Plain and the S.D. (Standard Deviation) for the same have been calculated and found to be 28.33% and 8.22% respectively.

FIG. NO. 75



SOURCE OF DATA :- CENSUS OF INDIA REPORT 1961, VOL. 4, PART II A (PATNA 1963)

The workers associated with hospitals (General, municipal or local board) also contribute considerably towards the miscellaneous service workers, but these never attain high percentages. But the special types of hospitals, however, connected with a college of medicine such as we find at Patna and Darbhanga, make them important 'medical centres' for the entire region and these two centres can somewhat be designated 'Medical cities'.

Diversified Towns - A number of urban centres in the region (31 in number) do not show high percentage in any of the five categories as discussed above. These are more or less 'diversified' urban centres. Of these one, namely Gaya is a city, 2 of them, namely Chapra and Dinapur are major towns, 16 are medium-sized towns and 12 are minor towns. So far as their territorial distribution is concerned, these do not show any marked concentration in any section. On the other hand they are dispersed and widely distributed throughout the region. A close analysis of the work reveals that the majority of these towns occur in the western South Bihar plain while a few of them namely Chapra, Hajipur, Mahnar etc. occur just to the other side of the Ganga facing Dinapur in the West and Bakhtiarpur in the East (Fig.75).

Chapter Seven
**Urban Hierarchy & Landmarks
of
Principal Centres**

CHAPTER SEVEN

URBAN HIERARCHY AND UPLANDS OF PRINCIPAL CENTRES

The growing urbanism throughout India and the various development programmes have made it all the more necessary to define and assess the nature of the relationship between the towns and their ¹umland. The relationship between the service centre i.e. a town and its surrounding area is not of course, a simple one. But an attempt, however, is made in this chapter to delineate the hierarchical order of these centres in Bihar Plain on the one hand and to assess as far accurately as possible the extent and nature of their umland on the other.

The concept of the Central Place & its Umlands -

All that an urban centre needs is not necessarily found or produced within the urban area of the centre concerned. Indeed there are centres like the cantonment or other strong-point towns where nothing is produced within. For their primary necessities, the centres in general depend to a great extent on their immediate surrounding or in most cases on the region in which they are located. The commercial centres like Khagaria, Kasia, etc. or the minor mill-towns like Begaha, Champatia etc. in Champaran district for example depend entirely on the supply of necessary items of trade or raw materials to be manufactured

1. A number of terms have recently been coined to give name to such regions. This is discussed later.

at these centres, from areas which are sometimes called 'Supply Region'. Again the collected material after necessary processing or manufacturing are redistributed to certain areas, termed 'market zones', so that in such cases there appears a direct interdependence between the central place and its unland i.e. the supply and market zone as outlined above. The servicing centres in course of time become deeply associated with each other on account of the effects of administrative influence, good communication links and easy transportation facilities. The administrative aspect exerts a great influence towards binding the towns with its country. The artery lines and quick means of transport exert and use economic influence on comparatively wide areas. The sphere of influence of the centre in this way expands gradually depending upon its size and functions and a time ultimately comes when a few smaller centres (central places of lower hierarchical order) also emerge out within the unlands of large ones. These secondary centres here act only as feeder points for towns of great hierarchical order.

The towns and the cities in this way are central places in smaller or wider areas where the modern amenities of life in terms of goods or services are processed and prepared and then distributed for the satisfaction of human wants all around. These can be termed 'service centres' and they discharge their function to areas near and far according to their significance. At the same time the residents all round these centres from areas far and wide appear to be attracted, so that there is a constant flow of rural folk from the surrounding areas to these centres

where they buy things of daily use and enjoy modern amenities of life. Again people from the smaller centres obtain their supplies of essential commodities from the bigger centres and even deal on a whole-sale basis, so that the smaller units may act as retail shop centres and may perform the same function or show the same aspect in their respective sub-sections for the local population.

Apart from the direct factors as mentioned above there are a number of other factors, though acting indirectly, that bring about a close contact between the urban centres and their umlands. Hospitals, educational institutions, bus services, circulation of news-papers etc. are some of the other essential means in Bihar Plain through which the tie between the two appears to be welded. The urban centre in short, acts as the main focus of human activities in an area surrounding them called 'umlands'. The concept is similar to that of a 'port' and its 'hinterland' but whereas the hinterland of a port is generally an economic region of supplier and receiver of goods, the central place and its 'umlands' apart from the economic integration show also a complete welding of cultural and social life.

The term Umland -

A number of terms such as urban hinterland, catchment
2 3 4
area, urban sphere of influence, city region, city tributary areas

2. Used by Green, F.H.W. in case of England Towns.

3. After Dickinson who used it in the case of Leeds & Bradford.

4. After Harris who used it in the case of Salt Lake City.

5 6
urban field, umland, heirarchy, etc. have been used and probably all of these terms aim at one and the same concept i.e. of urban-rural interdependence. With the growth of modern urbanization the society is so unified and consolidated day by day that there appears no confusion now as regards the fact itself. The writer is of the view that all the expressions except 'hinterland' which is generally reserved for the areas associated with ports and 'catchments' which is commonly employed in connection with 7 drainage, are reasonable and there is little merit on a debate on this issue.

Historical Development towards the Hierarchical studies by prominent workers -

Individual efforts to delineate the hierarchical order of centres on the one hand and to determine their umlands on the other have been varied and vast. The credit of the modern concept of hierarchy of towns, however, goes to C.J.Galpin of U.S.A.(1916) W.Christaller of Germany (1933), some Swedish workers such as Edgar Kent, etc. and British geographers such as Smailes and Green.

German workers -

8
In early thirties of the present century W.Christaller in Germany developed a comprehensive theoretical system of analysis

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- 5.Used by Smailes and supported by Gilbert.
6.Probably after Dodge who used this term in the case of Howell City of Central Michigan-'AAAG.Vol.22 No.3,September,1932'-Lawrence,USA 1932) pages 159-209 or after Whittlesey who used it in case of Kano a Sudanese metropolis - G.R.Vol.27, April,1937'(New York,1937)
7.Gilbert,H.W.-Geog.Journal (London 1950) page 88
8.Christaller,W.Die Zentralen Orte in Sud Deutschland (Jena,1933)
Carlisle W.Baskin's unpublished Ph.D.Dissertation,Department of Economics,University of Virginia,1957, 'A critique and translation of Walter Christaller's Die Zentralen Orte in Sud deutschland'.

that is called 'the Central Place Theory'. His study of central places in southern Germany has indeed become a classic literature. According to Christaller, service centres with respect to the type and intensity of their functions are arranged into several hierarchical orders such as hamlets, villages, towns and cities. These are dispersed over the countryside in a hexagonal pattern. Centres rendering more services are larger in size and of higher order. These are fewer in number and lie farther apart with respect to one another. 'The cities; forming centres of highest order in Christaller's scheme, serve a much wider region whose margins are connected by at least six towns. The choice of hexagonal pattern instead of circular is to avoid the complexity of overlap. The service centres big or small are located in the centre of the hexagonal umland, so that his theory is called

9

'Central Place Theory!'

Brosius in his attempt to study Frankfurt in Germany took into account the supply of food from the surrounding region. He considered the assembly of milk, vegetables, meat, grains, etc. and along with it he also examined the journey time in terms of hours by cycle, bus or train, so that he was able to distinguish distinct inner and outer umland zones of that centre.

Swedish Attempt -

10

The Swedish geographer Edgar Kant's article on

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9. Alexander, J. V. - 'Economic Geography' (New Jersey, 1963) page 560.
10. Lund studies in Geography - Section B. Human Geography, No. 3, Royal University of Lund (Sweden 1951)
- i. Edgar Kant - Umland studies & Sector analysis
 - ii. Sven Godland - Bus Services, Hinterlands & the location of urban settlements in Sweden, specially in Scania.
 - iii. Kant Erik Bergsten - Variability in intensity of urban fields as illustrated by Birth places.
 - iv. Torsten Hagerstrand - Migration & the growth of culture regions.

'Umland Studies and Sector analysis', discussing the towns of Estonia, Latvia and part of Yugoslavia, is quite useful. Based on inner functional differentiation, the region according to Kant is divided into central systems of urban and urban-like agglomeration. The system on the principle of supply represents circular formation. Within the umlands of greater centres he recognizes the concentration of other centres too, so that five orders of urban hierarchy in Estonian central system is recognised by him, namely towns, small towns, country towns, pygmy towns or larger boroughs and small boroughs.

Contributions of the British Geographers -

The earliest British attempt was that of Dickinson, R.E. who examined the urban influence of Leeds and Bradford in as early as 1930. He considers the business and insurance firms, newspapers circulation, influence of higher educational centres, retail shops dependent on the industrial firms and thereby determines the umland of Leeds and Bradford very effectively and to this zone of influence he gives the name 'Yorkshire
11
Region'.

Smiles Arther E. in 1944 attempted to arrive at a comprehensive classification of urban groups in England and Wales according to rank i.e. the degree of urban influence. According to him such an assessment of comparative status and graded order of towns, is what he calls 'horizontal

11. Dickinson, R.E. - 'Regional functions and Zones of influence of Leeds & Bradford' - GEOGRAPHY-Vol.15
September 1930 (London 1930) page 557.

12
distribution of towns". Apart from the various individual efforts by others or his own in the case of Middlesborough considered with respect to retail shopping and circulation of newspaper or about Ballymena in northern Ireland considered on the lines of buses plying from the centre, he tried to give an entirely different line of approach in determining the hierarchy in England & Wales. Towards his efficiency categories, he tried to take into account the presence of banks, cinema houses, secondary schools etc. He tried to identify the fully-fledged town and at the same time 'identified ranks above that level and varieties of sub-town
13
below it'. In this way Smailes established five orders of town hierarchy namely major cities; cities including some of the greatest market centres; minor cities or major towns occupying an immediate position between cities and towns; towns & subtowns.

Green in 1949 gave yet a new approach in determining
14
the urban hierarchy of England & Wales. Deviating from Smailes he recognizes five centres of different orders of significance. London as the great metropolis of the entire country to him is of the first order and whose functions are performed nowhere else. The minor centres providing facilities lacking in their immediate neighbours are at the other end of the order and are termed 'service villages'; while in between come the provincial

12. Smailes, A.E. - 'Urban Hierarchy in England & Wales' - GEOGRAPHY

Vol. 29, June 1944 (London 1944) page 41.

13. Harold Carter (Lec. in Geog. Univ. of Wales) - 'The urban Hierarchy & Historical Geography'. Geographical studies, Vol. 3 No. 2, 1950 (London 1950) page 85

14. Green F.H.W. - 'Urban hinterlands in England & Wales: an analysis of bus service'. G.J. Vol. 106, Sept. 1950 (London 1950) pages 64-88.

capitals (Birmingham or Bristol), major regional centres (Ipswich, Exeter, etc.) and ordinary small towns which are the ordinary regional centres.

American's approach -

About 20 years before Christaller presented his comprehensive 'Central Place Theory', C.J.Galpin in U.S.A. in 1915, as a Sociologist had studied the subject and noted that 'a sort of competition exists in a zone of overlap between two adjacent centre and that may probably induce some minor centres to develop in such a zone.

Kolb, L.H., an American Sociologist elaborating on Galpin's radial circular concept, suggested the growth of smaller centres near the peripheries of the secondary service areas of high ranking centres. The pull exerted by the centre either by its population or by its retail stores varies directly with the size of the centre and decreases outward with increasing distance. The smaller centres according to Kolb thus develop away from the higher centres.

Amongst the early American Stalwarts, Harris's analysis of a regional capital city like 'Salt lake city' was no less significant.

15. Christaller, however to avoid overlap considers 'hexagonal pattern' instead.

16. Brush, J.E.-G.R. Vol. 43 (New York) 1953, page 390

17. Ibid, page 392.

18. Harris, Chancy D.- 'Location of Salt Lake city' E.G. Vol. 17, Vol. 17, 1941 (Concord, New Hamp, USA 1941) pages 204-212.

John E. Brush, however, appears to be the prominent recent thinker in U.S.A., who has indeed re-oriented the American concept. He appears to patronize Galpin & Kolb on the one hand and Green and Smailes on the other and though a bit critical of Christaller, does not neglect him altogether. By the combined criteria of population, rank and functional significance, Brush gives a threefold classification of service centres — hamlets, villages¹⁹ and towns. Towns according to him in this category act as widely specialized urban centres in comparison to villages or hamlets. They may have a number of retail units, banks, cinemas, high schools etc. while a number of professions are also represented due to the presence of physicians, dentists, veterinarians and lawyers. Thus like the British geographers, he too admits that service centres can be graded according to population and functional attributes and that the locational pattern of the centres is controlled mainly by the radial movement of traffic. Seldom do the six roads from six villages or the six minor towns converge at any centre as Christaller postulates. Usually there are, invariably, two or three roads that bring both local and long distance traffic. 'The movement of vehicle as John Brush thinks,' is a ready measure of the continued economic & cultural influences drawing farmers to the centre in a region' But as a result of linear or clustered locations of the centres, the tributary areas according to him are seldom circular or hexagonal. They tend to be elongated at right angles to the

19. Brush, J.E. - 'The hierarchy of central places in south western Wisconsin' G.R. Vol. 43 (New York 1953) pages 380-402.

axes of towns or centres or extended eccentrically from centres to centres.

Harold Mayor, Haward L.Green, Berry & Grirrisson, Ulman Edward, Siddell William etc. are some of the other workers who appear to follow Brush in the main. Edward L. Ullman recognizes five types of centre in Phillip ines on the basis of their function and size, namely national centre (Manila); inter-regional centres (Population 2 lakh); major centres (large trade centres population 10,000 - 40,000); secondary centres (small trade centres population 5,000 to 25,000) and minor centres (small retail centres or some social centres (population 1,000 to 5,000²⁰). In his opinion the centres specially along the coast develop their hinterlands in accordance with the availability of transport. The umlands in this way, in most cases, are elongated at right angles to the road.

William R.Siddell provides an almost interesting and new index of urban centrality. He recognizes as a first-hand information, three types of cities - specialized one that draws its support from large area but appears to have no close relation with its immediate surrounding areas (Miami-City); transportation city such as New Orleans which may be only a 'break-o-bulk' point where cargo transfer between ocean going ships and river barges; and the central place city which serves a region as a collecting and distributing centre and as a cultural, social

20.Ullman, E.- Trade Centres & tributary areas of Phillippines' G.R.1960 (New York 1960) pages 203-218.

and administrative focus. These occur according to Siddell in an specially agricultural area. 'Centrality then,' Siddell puts it, 'might be defined as the degree of association between a city and its immediate hinterland.²¹ The quantitative approach made in accordance with the idea of Nelson, and Pownall clearly establishes the degree of centrality for the various centres. But Siddell is of the view that the centrality can be best assessed on the basis of the surplus workers at each centre.²² The Centre according to him can thus be shown by varying size of the circle, depending upon the number of workers the city has in surplus. This surplus method gives a vivid picture of the 'distribution and hierarchy of central places' and is probably the most accurate indications of central places, for it is not disturbed by the quantity of other specialized activities going on in a city or by the size of the city. The spacing of the central places in this case is remarkably orderly, the largest ones more widely separated and smaller places are closer together.

Indian efforts -

In India the efforts based on the modern concept of service centres and their umland have been carried out fruitfully by a number of geographers. In eastern Uttar Pradesh R.L.Singh and several others have tried to analyse the

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21. William R. Siddell. Whole sale-retail trade ratios as indices of urban centrality. E.G. Vol. 37 (Concord, New Hamp, USA 1961) p.125
22. Suppose the mean (or for self sufficiency in a particular activity) for a region is 20%. If a centre has 25% workers engaged in that activity it means 5% of the workers are probably available for catering the needs of outside the city area. E.G. Vol. 37 (Concord, USA 1961) page 132.

significance of the service centres like Varanasi, Mirzapur, Gorakhpur, Allahabad, Kanpur, Barhaji etc. They have, on the lines of Brosius very fruitfully employed the indices of the supply of milk, vegetable and grains, etc. to these centres and have also at the same time brought about the educational, medical and traffic influences of these centres over the surrounding region. Like Brosius, these writers have also tried to recognise inner and outer zones of umland for such Indian urban centres. Enayat Ahmad in attempting to give a subjective view of the umlands of the principal cities of Bihar appears to have followed Christaller's idea on the one hand and Edgar Kant on the other. He has very aptly tried to bring about a clear picture of the hierarchy of towns in Bihar. ²³ V.L. Prakasa Rao has tried to distinguish the urban hierarchy in the case of the towns of Mysore State. ²⁴ Based on the sample study of seven towns of Mysore State with respect to services and amenities and bus service frequency, he distinguishes several types of the centres as a bus service junction, intermediary point, a terminus or all. A centre in Rao's scheme belongs to the highest hierarchical order if the bus frequency as it exceeds 100 services; while a centre with less than 16 service schedules in the various direction is considered as belonging to the last i.e. 5th order. The degree and extent of influence of each town is measured by

23. Ahmad, E.- 'Bihar' (Ranchi 1963) pages 245-256.

24. Prakasa Rao, V.L.- 'Towns of Mysore State'- Indian Statistical Institute series, No. 22 (Calcutta 1964).

the area that is derived by the formula

$$D = \frac{T \times A}{U}$$

where 'D' stands for the area of influence, 'T' for the total population of the centre concerned while 'A' and 'U' stand for the total area and total urban population respectively for the entire region in which the centre is located.

It will thus be seen that the Indian writers have tried as far as possible to assess the significance of the service centres and their hierarchy in the Indian context.

URBAN HIERARCHY IN BIHAR PLAIN

The centrality of an urban centre involves two aspects - (i) assessment of its degree of efficiency as a service centre i.e. selection of some suitable criteria for classifying the centres into hierarchical order or rank and (ii) determination of the area dependent on the centre for goods and services i.e. the unland. We may thus enquire what amenities are available at a centre and to what extent ? and secondly who are benefited by these amenities and where do they come from ? It is ther fore a problem that can be dealt with in two ways : On the lines of Smailes and Green the population size of the centres on one hand and the administrative influences, educational medical, recreational, etc. facilities on the other, for each of the urban centre are to be considered so that various groups of

25. Brush, J. & Bracey, H.E.- 'Bus Service Centres in South Western Wisconsin' - Reading in urban Geography, edited by Mayer and Kohn, (Chicago, 1959) page 213.

centres on the basis of their ranks in relation to their size can be recognised. The routes converging on the centre, vehicles available, cost of transport and the time taken, etc. may limit the area covered called 'unland'. The other approach is afforded by the American Sociological investigators like C.J. Galvin, and Kolb. This idea is perhaps very successfully adopted and supported by Howard E. Bracey, a notable British Geographer, in delineating the hierarchical order of towns in Southern England. Here we may take into account the village residents visiting the towns for their essential needs with respect to postal, banking, medical, and educational services and for recreation, clothing and household goods. The efficiency of each town according to these writers may be measured by the number of villages partly or wholly dependent on it; while its unland may include all villages using the centre. This criterion of use by rural people may certainly give a valuable result but the method entails long questionnaires and requires a team of workers.

HIERARCHICAL ORDER OF TOWNS

The Bihar Plain since the beginning of the present century has been fast changing. Growing industrialization along its broader zone in the west, north and the east and along the southern bank of the Ganga and the introduction of a net of railway lines and other great developments such as power-cum-irrigation projects and improvement of roads and bridges since independence (1947) have all brought about a rapid push and pull

26. Readings in Urban Geography edited by Lyster & Kohn; (Chicago, 1959), page 214.

in the sphere of influence of the various service nodes; and a number of new centres have also sprung up where none existed before. The delineation of hierarchical order has in this way become all the more complex.

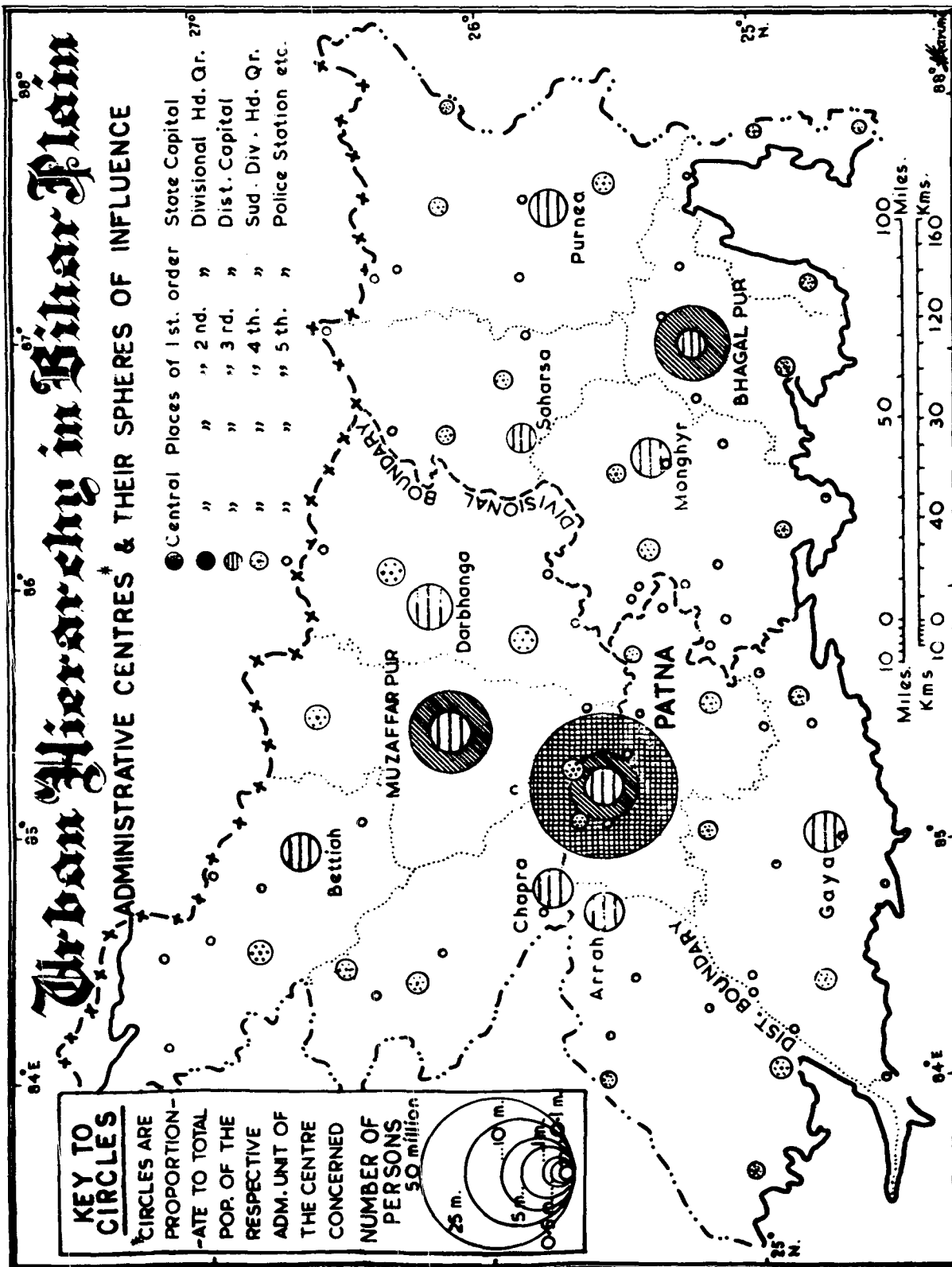
Administrative Centres -

The administrative significance of the towns in Bihar Plain is one of their most distinguishing characteristics. In view of the political set-up of the entire region and which is perhaps the key to all other service activities, a fairly definite hierarchy can be distinguished in these towns - such as state capital, divisional headquarters, district head-quarters, sub-divisional centres and police stations (Fig.76).

The centre of the first order is Patna which is the administrative apex not only of Bihar Plain, but is indeed the political hub of the entire state. Besides the Bihar Legislature and Secretariat Buildings of the Bihar Government, Patna also contains the High Court and offices of the Post Master General, Directors of various departments and Commissioners of Income Tax, Excise etc.

The centres of the second order are the three Divisional Headquarters. Of these Patna is already a major centre of first order, while Muzaffarpur and Bhagalpur are the two other centres included in this category (Fig.76). As the administrative headquarters of the divisions concerned, a large number of Government offices are located at these centres. They include the offices of the Divisional Commissioner, Superintending

FIG. NO.76



Engineers, Executive Engineers, Assistant Director of Public Health Deputy Director of Agriculture, Deputy Director of Veterinary Services, Commercial Taxes Superintendent, Assistant Commissioner of Labour, Employment Exchange and usually a central jail occurs at these centres.

Centres of the third order include the 'District Headquarters'. Eleven such centres are located here. Of these three namely Patna, Bhagalpur and Muzaffarpur, as noted above are already centres of higher order. Administratively the entire district ranging in area between 2,000 to 4,000 square miles and containing on an average about 3 million people (Fig. 76) including 0.25 million urban population, is controlled by the office of the District Magistrate who is also known as 'Collector'. He is assisted by an Additional Collector who generally looks after the revenue and a District Development Officer for the development works. On the police administration side the D.M. is also assisted by the Superintendent of Police (S.P.) who is directly responsible for maintaining law and order. The administration of civil justice, however, is controlled by the District Judge, while the District Magistrate himself controls and supervises the detection of crimes and the institution and prosecution of State cases in the district, in which capacity he is assisted by a Deputy Magistrate in charge of legal section. For the control of postal services and income tax collection in the district, the offices of the Superintendent of Post Office and the Income-Tax officer, are also located at these centres. A registration office with District Sub-Registrar as its in-charge is also located at the



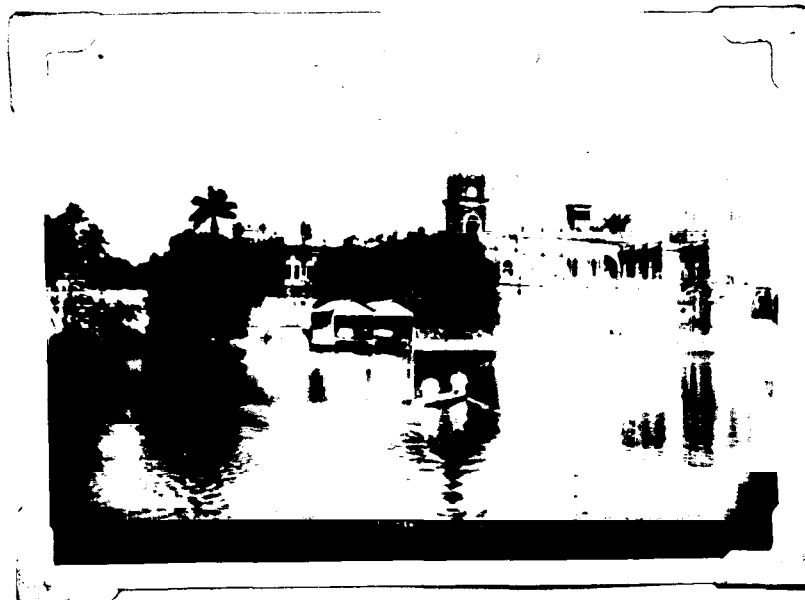
No. 25
The Secretariat Building, Patna - the
Political hub of the entire Bihar Plain



No. 26
Medical College, Darbhanga - the main attraction
of the new city of eastern North Bihar.



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